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No. 1234

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**USSR REPORT  
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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### COLD APRIL WEATHER AFFECTS MOST OF USSR

Moscow SEL'SKAYA ZHIZN' in Russian 20 Apr 80 p 6

Article by Ye. Chistyakova, research associate of the USSR Hydrometeorological Center: "April 'Escapades'"

Text The weather in April, the transitional month from winter to summer, is notable for great changeability. Among the people the caprices of the weather during this month are called April "escapades." Here, too, are the first thunderstorms, which can alternate with snowfall, as was the case in early April 1968. At times hurricane winds can also suddenly appear. A wind velocity of 34 m/sec was recorded in Moscow in the middle of April 1967. Frequently after warm spring weather sets in the fields again turn white with snow, blizzards whirl, the ground turns hard. In recent times a snow cover appeared in the second half of April in 1971, 1974, 1978 and 1979.

The spring of this year is also not causing joy with warmth. Cold air from the north of Greenland, one of the coldest regions of our planet, swooped down on the European territory of our country. The strong meridian streams, which formed in the atmosphere, were conducive to the rapid movement of this air from the north to the south. In Murmanskaya Oblast, the northern part of Arkhangel'skaya Oblast and the Komi ASSR the temperature fell to -17° to -20°.

In the lower 5-km layer of the atmosphere the temperature fell by 15-20°. At an altitude of 1 km over Moscow, for example, the temperature reached -10° to -12°. Therefore even the bright sun was not able to warm the air which was circulating near the earth's surface.

For the central belt of the European territory a cooling trend in mid-April is not so rare a phenomenon. In the past 88 years of observations 34 times during these days in April the weather was cold, in approximately half of these Aprils the temperature at night reached -5° to -10°. And last year at this time it was also cold. For nearly a week the temperature at night was -6° to -9°.

A cooling trend in the southern regions during April occurs more rarely. But a delay of spring in the Ukraine is also frequently noted--once every

five years. Cold weather penetrates Transcaucasia considerably more rarely. For example, in recent days the temperature fell sharply in Armenia. It also turned cooler in Georgia, but in the main regions, where active vegetation has begun, frosts have not been noticed. The cooling trend in Azerbaijan was accompanied by rains, which were especially strong in Lenkoran'-Astarinskiy Rayon, while in the Nakhichevanskaya ASSR even snow fell. A sharp change in the weather is also now taking place in Central Asia. After 10 days of stable and hot weather, when on some days the maximum temperature in Tashkent and Frunze reached record highs, a decrease of the temperature by 13-17°, considerable rainfall and an increase of the winds are anticipated. Mud flows might occur in the mountains. Night frosts are possible in the northern regions of Turkmenia and Uzbekistan.

Unusual in its intensity and more typical of the winter season, this low-pressure area has brought bad weather to the regions of the Volga, the Volga-Vyatka Region, the Central and Southern Urals and the Central Region.

The prospect of an improvement in the weather has now begun to show. On the European territory of the USSR a shift of the air from the west and southwest is anticipated, which will lead to an increase of the daytime temperature to +6° to +11°.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BASHKIR WEATHER, PREPARATION FOR SPRING SOWING

Moscow IZVESTIYA in Russian 17 Apr 80 p 1

Article by R. Bikmukhametov (Bashkirskaya ASSR): "The Order for the Harvest"

Text The current spring has brought the farmers many surprises. Its stormy start made it incumbent to increase sharply the rate of repair of the sowing equipment. But a week later the weather "calmed down," and then turned completely around: to snowfalls and blizzards. But, as they say, every cloud has a silver lining. First, the fields received a good addition of moisture and, second, all the equipment is practically ready to go out into the field.

However, all this does not at all mean that the future sowing will be easy and smooth. It is worth recalling if only the winter, the almost snowless and severe start of which also greatly worried the rural workers. The plants, which were barely covered by a thin blanket of snow, felt uncomfortable under the blows of the hard frosts. A significant portion of the winter sowings suffered greatly, therefore the areas, which it is necessary to sow with early cereal crops, increased by nearly 350,000 hectares. Moreover, in many rayons the soil froze to a great depth, which unquestionably will also complicate the work of the grain growers.

The republic party organizations and the local soviets are not forgetting these circumstances. All the organizing and ideological work is aimed at carrying out the spring sowing in the optimum time according to a rigid schedule and with the strict observance of the entire set of agrotechnical methods. The advanced know-how of the best farms of Ilishevskiy, Dyurtyulinskiy and Aurgazinskiy rayons is being promoted in detail and extensively.

And there is truly something to learn from them. I had occasion to visit the Kolkhoz imeni K. Marx and the Pobeda Kolkhoz of Dyurtyulinskiy Rayon. Not only the sowing equipment, but also all the combines have been placed on the line of readiness here. First-class seed has been prepared. This spring the fields will receive twofold more organic fertilizer than last year. To this it should be added that all the sowing units are manned for

operation in two shifts by skilled machine operators, who have recently been certified.

"We have examined and thought over all the details of the future sowing, relying on the experience of our neighbors, the recognized experts in the cultivation of large crops from Ilishevskiy Rayon," relates First Secretary of the Kushnarenkovskiy Rayon Party Committee F. Mullagaliyev. "The analysis of the work of the farms of the rayon in the past years and the comparison of the results with the deeds of the Ilishevskiy Rayon farmers helped to identify our shortcomings. One of them is the frequent violation of the optimum period of sowing. Another is the low standard of farming, particularly the low quality of the preparation of the fields, careless sowing and the inept use of fertilizers. If we make these reserves work for the harvest, the yield of each hectare will increase by 5-5.5 quintals."

"Our order for the harvest is now great," says F. Khusainov, manager of the sowing link from the Kolkhoz imeni Sverdlov. "We should raise 30 quintals of grain on each hectare. We have done much for this. The equipment, which is united into three large complexes, has been carefully readied. The adjustment links will work under the guidance of the unified dispatcher service. The main thing remains--to carry out the sowing with a high quality in 84 hours."

Such are the orders for the harvest during Lenin's anniversary year at many republic farms, and they have been backed by thorough preparation, skillful calculations and reliable agronomic tactics.

In speaking about the serious work now being performed in Bashkiria on the introduction of advanced know-how, I want to note another interesting feature of this spring. At some competing farms it has been decided in accordance with the progress of all types of field operations to enter their results in unique passports in order to compare the results later, after the harvest. It seems that this interesting experiment will make it possible to identify new reserves for increasing the yield of the fields.

But still they are not preparing for the spring test everywhere with such responsibility. About what advanced know-how is it possible to speak, if at some farms of Arkhangel'skiy, Al'sheyevskiy, Baymakskiy, Yanaul'skiy and several other rayons so far 30-40 percent of the sowing equipment has not been repaired, a considerable portion of the seed has not been brought up to the necessary conditions?

There is still time. The farmers of Bashkiria have all the means to lay an excellent foundation for the harvest at all the kolkhozes and sovkhozes without exception.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

SPRING SNOWS IN SOUTHERN, WESTERN SOVIET UNION

[Editorial Report] In Moscow SEL'SKAYA ZHIZN' in Russian 18 Apr 80 p 4 reports snow has continued into the second half of April in some areas of the southern and western Soviet Union. A TASS announcement referred to snow falling on 17 April in Armenia: "Usually April is a time of blossoming fruit trees, the air temperature warms up to 20 to 25 degrees. It is truly unusual to see snow on the green leaves.

"The largest amount, up to 25 centimeters, was registered in the mountainous areas, where the thermometer showed 9 to 12 degrees below zero. In the Ararat Valley the soil temperature dropped to minus 2 degrees.

In Moscow SEL'SKAYA ZHIZN' in Russian a short article describes the Moscow area weather. "Snow falls, blasts of icy air, the sky in heavy clouds, this was the way Moscow looked last week. But on Sunday [20 April] it warmed up...."

In Vilnius SOVETSKAYA LITVA in Russian 23 Apr 80 p 1 a review from Lithuania discussed field work going forth and adds: "However on Saturday and Sunday [19 and 20 April] snow fell and it got cold. Work on preparing the soil and sowing was suspended in some places...."

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SEED STOCKS ADEQUATE FOR SPRING SOWING

Minsk ZVYAZDA in Belorussian 30 Mar 80 p 1

[Article by P. Rusakov: "Complete Readiness for Spring Sowing"]

[Text] Soon the planting crews will be taking to the fields. This year kolkhozes and sovkhozes have resolved to produce a per-hectare average of not less than 32 quintals of grain, 190 quintals of potatoes, 270 quintals of sugar beets, 5.4 quintals of flax fiber, and 190-200 quintals of vegetables.

The first and principal way to achieve the stated goals is a substantial increase in yields of all farm crops on the basis of further improvement in the crop acreage structure, efficient utilization of mineral and organic fertilizers, and improvement of farming practices. Of particular importance is selection of varieties and seed quality.

The entire required quantity of seed for spring planting of cereals and legumes in this republic is available. On the kolkhozes and sovkhozes of Ivatsevicheskiy, Drogichinskiy, Stolinskiy, Orshanskiy, Khoynikskiy, Grodzenskiy, Mstislavskiy, Soligorskiy and other rayons all seed stocks are high-quality, while total barley seed stocks meet the requirements of first-class condition.

Good management concern is being shown for seeds stocks in the majority of rayons in Brestskaya Oblast. In this oblast the plan target was met ahead of schedule for putting away both primary and reserve seed stocks, and seed stocks have been brought to high condition. Almost 76% of seed grain is first-class. This is the highest figure among the oblasts of this republic. A particularly good job has been done on preparing barley seed, 87% of which meets the highest quality standards. At the same time there still remains much to be done in this oblast in order to bring up to high planting condition flax seed and perennial grass seed. The farms of Baranovicheskiy, Maloritskiy, and Pruzhanskiy rayons are particularly behind in this area.

Concern is aroused by the fact that up to the present time many kolkhozes and sovkhozes are not fully supplied with leguminous crop seed. Mogilevskaya Oblast contains the greatest number of these farms. The situation is no better as regards perennial grasses. One fourth of the farms which plant flax do not have the requisite quantity of fiber flax seed. The kolkhozes and sovkhozes of Berezovskiy, Zhabinkovskiy, Slutskiy, Belynichskiy, and Osipovichskiy rayons are less than half-supplied with buckwheat seed.

Many farm managers and specialists have failed to show adequate concern for insurance seed stocks. Only Brestskaya Oblast fully met the target for putting away cereal and legume insurance seed stocks. Practically nothing has been done toward this end in Gorodokskiy Rayon. This problem is being resolved to a no better degree in Sharkovshchinskiy, Berezinskiy, and Cherikovskiy rayons.

Particularly disturbing is the fact that on some farms the laid-away seed stocks have still not been brought up to a high planting condition. For example, a check conducted on the Raayya Kolkhoz in Smorgonskiy Rayon and the Svetly Shlyakh Kolkhoz in Mogilevskiy Rayon revealed that all legume seed is nongrade. Similar poor management was observed on the Zara Kolkhoz in Lidskiy Rayon and on the Sovkhoz imeni Michurin in Chervenskiy Rayon, which had put away flax seed which is unsuitable for planting. Perennial grass seed is also of poor quality on the Maladaya Gvardyya Kolkhoz in Iv'yevskiy Rayon, on the Zapavety Lenina Kolkhoz in Dyatlovskiy Rayon, and on the Geroy Pratsy Kolkhoz in Klimovichskiy Rayon.

No less attention must be devoted to preparing oats for planting. This crop occupies an important position in the grain balance. It is true that the seed layaway target was met, but unfortunately less than half of the seed is first-class. The worst job in this regard was done by the kolkhozes and sovkhozes of Beshenkovichskiy, Verkhnedvinskij, Glubokskiy, Belynichskiy, Klirovichskiy, Slonimskiy, and Gantsevichskiy rayons.

Preparation of buckwheat seed is proceeding slowly, and a large quantity of this seed is nongrade. The situation is particularly alarming on the farms of Gomel'skaya Oblast. In this oblast they are supplied barely half with this seed, while only one fourth is graded to first class. In Beshenkovichskiy, Gorodokskiy, Svislochskiy, Goretskiy, and Krasnopol'skiy rayons there is essentially no first-class flax seed.

The facts indicate that farmers must still accomplish a great deal of work in order to complete preparation of seed. And there is not a single day to waste in this important activity. This means that more strict demands should be placed on agronomist service specialists and farm managers in order to get this task accomplished.

Fertilizer is of the greatest importance in the group of agricultural measures to increase crop yield. At the present time the rate of preplant application is somewhat greater than that of last year. They are falling behind schedule in hauling organic fertilizers to the fields, however, in Kamenetskiy, Orshanskiy, Dubrovenskiy, Mogilevskiy, and Kostyukovichskiy rayons.

It is possible to perform all planting operations in a timely manner and with excellent quality only under the condition that equipment is fully ready to go and with considerable skill on the part of machinery operators. They are well acquainted with this truism on the Paryzhskaya Kamuna Kolkhoz in Braginskiy Rayon, but they do not put it into practice. They have not

yet completed tractor overhauls and repairs. The Iskra Kamunizmu Kolkhoz in Borisovskiy Rayon is doing no better a job of readying equipment. There are similar deficiencies on other farms.

Assignment of tractor drivers to equipment for two-shift operations should already be completed. This important task has not yet been completed, however, on all farms. In 14 rayons in this republic there is only enough manpower available for one driver per tractor, while figures are even worse in Verkhnedvinskij and Leznenskiy rayons.

As planting time draws near, rural Communists are called upon to do everything necessary to ensure that each and every kolkhoz and sovkhoz begins the spring planting fully equipped and performs it with the very highest quality.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### CORN CULTIVATION IN NORTHERN CAUCASUS

Moscow PRAVDA in Russian 14 Apr 80 p 1

Article by V. Artyomenko (Severo-Osetinskaya ASSR): "A Test for Skill"

Excerpts The farmers of the Northern Caucasus will be growing corn for the first time by industrial technology on large areas. In Northern Ossetia, for example, 45,000 out of the 48,000 hectares are being planted in this way.

It should be noted that last spring the new technology had already been tried out at seven farms on 4,000 hectares. But at that time only a portion of the corn growers were familiar with it. Now everyone has studied the innovation: party and managerial workers, specialists and machine operators. Representatives of Northern Ossetia visited Moldavia and Kabardino-Balkaria. Seminars were held at the Northern Caucasian Scientific Research Institute of Alpine and Piedmont Agriculture and the Gorskoye Institute of Agriculture. Training was carried out in all the rayons.

A republic conference of corn growers was held a few days ago. They set their tasks for the current year--to obtain 34.5-35 quintals of grain corn from each hectare, to harvest not less than 165,000-170,000 tons of it and to sell to the state 93,000 tons of seed for other zones of the country. The task is difficult, but feasible. At the conference the managers of 203 links approved the conditions of the socialist competition. Eleven collectives assumed the obligation to obtain not less than 100 quintals of grain corn per hectare, and 29 collectives--70 quintals.

Unique sowing rehearsals are now under way at the corn growing farms of the autonomous republic.

In Mozdokskiy Rayon, which is located in an area of insufficient moistening, the supply of the soil with water is now being carried out. Work in two shifts has been organized for the watering. Party groups, which will also head the competition for the successful performance of the watering and sowing, have been set up in every mechanized corn growing detachment.

On the whole the farms of the republic met the spring period of hard work well. The planting of potatoes and the sowing of peas and fodder crops were completed successfully. The kolkhozes and sovkhozes of Ardonkiy and Prigorodnyy rayons began well the sowing of spring crops. And still it was not possible to get by without disruptions. Not all of the specialists learned, for example, the new technology of cultivating corn. Now their certification is under way. Of the 77 agronomists who took the exam, 17 received unsatisfactory marks.

The industrialization of the corn field requires much new equipment. The city people have come to the aid of the country people. The patrons have manufactured 700 sections of graders and about 100 units for applying herbicides. But there are not enough tractors, heavy disc harrows and general-purpose mounted drills.

"The supply enterprises are letting us down," says Severo-Osetinskaya ASSR Minister of Agriculture P. Tedeyev. "For example, during the first quarter the Sibsel'mash Plant should have shipped spare parts for the repair of heavy disc harrows. The deliveries have been upset. The Rostov Krasnyy Aksay Plant, which has not begun the shipment of spring-tooth harrows, has done the corn growers the same kind of 'favor.' The RSFSR State Committee for the Supply of Production Equipment for Agriculture is poorly monitoring the work of the supply plants."

This season will be a rigorous test for the experts of the corn fields. Whoever is able to observe all the details of the industrial method will pass it. Great efforts and accurate work will be required of every party and economic manager, specialist and machine operator.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### CORN GROWING TECHNIQUES, THIS YEAR'S CONDITIONS DISCUSSED

[Editorial Report] In Kiev SIL'S'KI VISTI in Ukrainian of 30 April 80 p 1 carries a round table discussion on new industrial methods for growing corn. Whereas last year these methods were employed on only 20,000 hectares, this year their area of employment has been expanded to 380,000 hectares. Moreover sowing has been going forth under adverse weather conditions, requiring special precision in the work of the corn growers and a creative differentiated approach to matters in each case.

First deputy minister of sovkhozes for the Ukrainian SSR A. P. Lysenko refers to this year's delayed spring and notes that weather conditions forced the beginning of spring field work back by 2 to 3 weeks from past years. In connection with a insufficient warming of the soil there has been a corresponding delay in the sowing dates for corn. These factors naturally demand corresponding adjustments in the workers' plans.

Deputy head of the southern department of VASKhNIL O. O. Sobko goes into more detail on pre-sowing conditions:

"Under this spring's conditions the formation on the surface of the soil of moist clumps, which have a negative effect on herbicide effectiveness, sowing quality and the attainment of even corn sprouts, may be observed when putting herbicides down with disk type implements. In this connection in certain cases pre-sowing cultivation...will be necessary after the herbicide is applied and worked into the soil.

"At this time in the majority of the steppe zone oblasts in the Republic the calendar sowing dates for corn have already passed. Therefore it should begin immediately as soon as the soil temperature is stable temperature of 8 to 10 degrees in the plowed layer. This work should begin with corn for green chop and silage. But corn for grain should begin with more cold resistant hybrids (early ripening, multiline), less sensitive to low temperatures. Seed of lower germination capability (but not lower than second class standard) is best sown on good stably warm ground toward the end of the optimum sowing dates."

Director of the All-Union Scientific Research Institute for Corn V. S. Taykov notes one other factor:

"In connection with the decreased nitrogen fixation capability under conditions of the cold spring the supplying of the corn plants with nitrogen nutrients takes on a special importance...."

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### GRAIN GROWERS ADVISED ON TOP DRESSING OF WINTER CROPS

[Editorial Report] In Kiev SIL'S'KI VISTI in Ukrainian of 29 Apr 80 p 1 advice is offered and instructions to grain growers on techniques for various areas and situations.

"The time has now come for application of fertilizer to the roots with disk-type seed drills.

"Under this year's conditions when, as a result of frequent precipitation the soil in many fields is compacted, this progressive mode of top dressing is especially effective. It makes it possible to put the fertilizer down into the soil and simultaneously loosen the surface...."

"On stands damaged by the ice crust with well-developed plants it is feasible to combine root top dressing with overseeding of winter crops in the depressions [blyudtsi]...."

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BELORUSSIA FIELD WORK PROGRESS, PROBLEMS

Minsk ZVYAZDA in Belorussian 18 Mar 80 p 3

[Articles by P. Rusakov: "Farmer, Do Not Delay"]

[Excerpts] At the initiative of leading farms, a vigorous campaign is in progress to obtain a big harvest in the final year of the five-year plan. Farmers are enthusiastically adopting the know-how of the right-flankers.

The farmers of Kletskiy Rayon, for example, are building a reliable foundation for a big harvest. They are completing the target pertaining to applying organic fertilizer to the fields. The farms of Dokshitskiy Rayon are proceeding with this activity at a rapid pace: up to 10,000 tons of fertilizer per day is being hauled into the fields for preplant application. Thanks to shock-work labor by the mechanized teams and detachments, considerably more fertilizer has been prepared and applied than last year. The kolkhozes and sovkhozes of Uzdenskiy, Shumilinskiy, Lel'chitskiy, Luninetskiy and other rayons are working equally diligently to accomplish the task of improving land fertility.

Success is favored for those who have correctly organized placement of personnel and who utilize equipment in a highly productive manner. This is attested by the experience of the Novaye Zhytstye Kolkhoz in Korelichskiy Rayon. They have formed a mechanized detachment, assigned to it the most experienced farm machinery operators, and have furnished it with the requisite equipment. Skilled work organization, continuous monitoring of job performance, and good organization of socialist competition have ensured success. This kolkhoz already has applied more than 25 tons of organic fertilizer per hectare on acreage to be spring-planted.

For the republic as a whole, the pace of this work is improved over last year. The kolkhozes and sovkhozes have prepared more than 62 million tons of fertilizers. The farms of Minskaya Oblast have overfulfilled the fertilizer preparation target, while the farmers of Vitebskaya Oblast have achieved the top figures in field application.

Many farms, however, are performing this work below their capabilities. Many kolkhozes and sovkhozes in Kamenetskiy Rayon have shown an especially slow pace of securing and applying organic fertilizers. Volozhinskiy, Gluboksiy, and Dobrushskiy rayons are also lagging considerably behind. This is a consequence of poor equipment utilization and poor organization of machinery operator labor.

Certain farm managers and specialists are putting off preplant application of organic fertilizers to the last minute. This is an incorrect, erroneous approach to this activity. Every farm has the task of applying organic fertilizers to the fields prior to commencement of spring planting operations.

Much has also been accomplished in the area of readying seed. All oblasts have met their seed layaway targets. Now it is extremely important to make sure that all seed is brought up to first-class condition. Up to the present time, however, certain farm managers and specialists as well as local Soviet and agricultural agencies have failed to attach adequate importance to this matter. This alone can explain the fact that the procedure of bringing seed up to top condition is proceeding very slowly. In Verkhnedvinskij Rayon, for example, only one fifth of total seed stocks of cereals and legumes is in first-class condition.

The status of flax seed evokes particular concern. Some farms do not yet have enough seed for their total acreage to be planted to flax. A considerable quantity of flax seed is below-condition, chiefly due to degree of cleanliness. A similar situation prevails with perennial grass seed. We cannot accept this situation. It is the first and primary obligation of agronomists to take prompt steps to ensure that in these next few days seed cleaning is completed and seed is brought up to first-class condition. Seed dressing must also be performed without delay.

Among the many present concerns of our rural workers, prompt completion of equipment overhauling and repair remains a principal item. It is true that many farms and entire rayons have done a good job and have put on ready status all cultivating and planting equipment. Nevertheless, not all farm shops are keeping up with their work schedules. This leads to failure to complete readying of equipment on schedule. Grain combine harvesters are being repaired and overhauled particularly slowly. A poor job is being done in this area by the kolkhozes and sovkhozes of Berezinskiy Rayon. In this rayon a large number of tractors are not yet ready to take to the fields, the combine repair and overahul schedule is not being met, and potato planters are being readied for service with delay. Quality of over-haul and repair is also poor in places.

Time does not stand still. The spring field work is approaching. Farm managers, party organizations, local Soviet and agricultural agencies must do everything necessary to ensure that farmers take to the fields in full combat readiness.

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BRIEFS

COTTON SOWING--Chimkent, 11 Apr--The mass sowing of cotton has begun in Chimkentskaya Oblast. The farmers of Kelesskiy, Chardarinskiy and Kirovskiy rayons were the first to bring the sowing equipment to the fields. At the farms of Kelesskiy Rayon 2,200 hectares have already been sown--one-fourth of the planned area. The brigade of Maden Bukharbayev from the Sovkhoz imeni Gani Muratbayev needed three workdays to complete the sowing. Last year this collective harvested 38.7 quintals of cotton from every hectare, while now it has resolved to obtain 50 quintals. Another 120 mechanized brigades have planned to exceed this mark. Precision seeding machines are being used everywhere during the planting, phosphorus and nitrogen fertilizers are being applied to the soil at the same time as the seed. Now the oblast farmers have decided to increase the area of cotton to 125,550 hectares, which is 6,550 hectares more than were taken up by it last year. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 12 Apr 80 p 1 / 7807

WINTER CROP CARE--Rostov, 11 Apr--The snow has left the fields of the oblast. Not letting the good moment pass, the farmers have begun to take care of the sowings of winter crops. They have skillfully organized top dressing of winter crops in Tselinskiy Rayon--one of the major suppliers of wheat of the strong and valuable varieties. Some 300,000 hectares were top dressed, and with allowance made for the autumn-winter season--about 1 million. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 12 Apr 80 p 1 / 7807

ASTRAKHAN' SPRING FIELD WORK--Astrakhan', 12 Apr--The field work in Ikryanniskiy, Kamzyakaskiy, Narimanovskiy and other rayons of the oblast is picking up speed. Early spring crops have already been sown on the first hundreds of hectares. Field work is being carried out on a broad front in Limanskiy Rayon. Grain corn will be cultivated here for the first time by industrial technology. Much attention in the rayon is being devoted to the fertilizing of the fields with local and mineral fertilizers. More than 60 tractors and trucks are engaged in the procurement and hauling of manure. Every day 1,250-1,300 tons of it are delivered to the irrigated areas. [Excerpts] [Moscow SEL'SKAYA ZHIZN' in Russian 13 Apr 80 p 1 / 7807

WEATHER SLOWS PROGRESS--Odessa, 12 Apr--The unstable weather is complicating the performance of field work. The machine operators have to snatch

literally hours to do some work in the field. In Kiliyskiy Rayon they quickly covered the moisture on the land plowed in the autumn. /Excerpt/ /Moscow SEL'SKAYA ZHIZN' in Russian 13 Apr 80 p 1/ 7807

AZERBAIJAN CROP SOWING--Azerbaijan SSR--First Secretary of the Bardinskiy Rayon Party Committee and Hero of Socialist Labor R. Safaraliyev relates: "Our rayon is the largest producer of 'white gold' in the republic. Last fall we turned over to the state 85,000 tons of raw cotton with a plan of 53,000 tons. We are thinking of exceeding even this mark." The communists and all the workers of the rayon are striving persistently for a high yield of the hectare. Before the sowing the plantations received nitrogen fertilizers, then phosphorus fertilizers along with organic fertilizers. Seed of high reproductions is falling on the soil almost everywhere. The farmers of Agdzhabedinskiy, Sabirabadskiy, Zardobskiy and several other rayons are skillfully using the machinery and every fine hour on the spring field. A peculiarity of the current period of hard work is the high standard of labor, the aspiration to use the seed and every hectare of plowed field economically. At many farms the unnecessary roads have been plowed up, the maps of the fields have been enlarged. All this made it possible to bring additional areas under cultivation. In the republic the sowing of corn for grain and silage and other crops is under way at the same time. The fodder field is also receiving good, timely care. The top dressing, harrowing and watering of alfalfa are continuing. The goal is being set to procure as much forage as possible and to increase its quality. /Excerpts/ /Moscow PRAVDA in Russian 13 Apr 8 p 1/ 7807

UKRAINIAN FIELD WORK--Kiev, 15 Apr (TASS)--The front of the field work in the Ukraine is expanding. Following the grain growers of the Crimea and Odesskaya Oblast the machine operators of Zakarpatskaya, Khersonskaya, Nikolayevskaya and Zaporozhskaya oblasts joined the sowing. Due to unfavorable weather the farmers went out into the field half a month later than usual. In order to carry out the sowing in the shortest possible time, combined technological operations are being performed and efficient wide-cut units are being used. Where conditions allow it, the equipment is being used round the clock. The Ukrainian grain growers have set for the last year of the five-year plan the goal to cultivate and harvest 53 million tons of grain--3 million tons more than the plan. /Excerpt/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Apr 30 p 1/ 7807

FIELD WORKER TRAINING--Orel, 15 Apr--The farmers of the oblast have to plant more than 600,000 hectares of early spring cereals. About 32,000 machine operators will take part in the spring work. It has been decided to carry out the sowing in only two shifts, quickly and with a high quality. About 4,000 tractor drivers, combine operators and drivers are being trained in courses of technical universal education in order to reinforce the detachment of machine operators. The next graduation of machine operators was held a few days ago at the Livny Prompribor Production Association. After the four-month courses without leave from work 30 people received tractor driving licences. A considerable portion of the machine operators of the enterprise have already gone to the affiliated farms, where they will take

part in the spring field work. *[Text]* *[Moscow SEL'SKAYA ZHIZN' in Russian*  
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AGRICULTURAL AIRCRAFT OPERATIONS--Gor'kiy, 15 Apr--Taking advantage of the favorable conditions--warm, windless weather--the winged farmers are treating the grain crops and perennial grasses at the farms of Pavlovskiy, Kstovskiy, Sergachskiy, Pochinkovskiy, Arzamasskiy and a number of other rayons of the oblast. In all 55 crews, including 30 from the Novosibirsk and Omsk aviation detachments, will take part in agricultural work. They will top dress about 900,000 hectares of plantings of winter crops and perennial grasses. *[Excerpt]* *[Moscow SEL'SKAYA ZHIZN' in Russian* 16 Apr 80  
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CRANE RESCUE--A flock of cranes, which number 150 of these rare and beautiful birds, when returning from the south to their permanent nesting place, ran into trouble. This happened in Armenia. The weather suddenly turned bad on the territory of the republic. An icy headwind forced the worn out flock of cranes to land on the shore of Dzhogaz Lake. The birds tried to find here refuge from the weather and food. But the elements did not die down, there was no food. The builders, who had erected a dike on the lake, came to their aid. They put up tents, transferred the birds to them, warmed and fed them. And in the morning vehicles of the veterinary service stopped at the shore of the lake--physicians had come to the long-legged "patients." The struggle for the life of the birds went on for an entire week. Warmed by human heat, affection, they went out and stood on their feet. With the first warm days the flock took off and flew to the nesting places. *[Text]*  
*[Moscow GUDOK in Russian* 27 Apr 80 p 4 7807

SOCHI COLD SPELL--Sochi--In the health resort city of Sochi it turned unusually cold. To the surprise of all, the roofs of houses, trees, bushes, streets and squares of the city were even covered with wet snow. And although it quickly melted, mixing with streams of spring rain, the breath of winter as before is felt in many things. The lush flowering of fruit trees and the sudden appearance of emerald green are not visible. Heavy clouds hang low over the Black Sea. "Here, of course, cooling trends were noticed previously during this season," relates Chief of the Sochi Hydrometeorological Bureau D. F. Lysak. "But there has not been one like this one in the past half century. For the first time we have recorded in our logs on the night of 16-17 April a negative temperature--minus 1° in Adlerskiy and Lazarevskiy rayons. But whereas in the city itself only wet snow mixed with rain fell, on Krasnaya Polyana and Mount Ochishkho--at places only 600 m above sea level--the depth of the snow cover reached 10 cm." Such a weather anomaly is explained by the abrupt arrival in the Black Sea region of very cold Arctic air. With a speed of 80-100 km/hr this northern newcomer burst into the comparatively warm Black Sea air and cooled it, creating at the same time persistent cloudiness. But let not those, who are getting ready to come here to rest, be discouraged. In the very next few days the warm spring sun will again shine over Sochi. *[Text]* *[Moscow TRUD in Russian*  
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ICE FISHERMEN RESCUED--About 300 winter fishing enthusiasts found themselves on two ice flows, which were being carried away by a storm wind into Lake Ladoga. Every day Radio Leningrad has reported several times that the ice in the Gulf of Finland and on Lake Ladoga is very cracked and it is dangerous to go out on it. Nevertheless this did not stop several ice fishing enthusiasts. To rescue the fishermen militia workers and military pilots, who had been put on the alert, had to promptly carry out this operation, in which six helicopters, boats and ambulances too part. As LENINGRADSKAYA PRAVDA reported, all the people in trouble were saved. But it involved both time and considerable risk for the pilots, the workers of the Administration of Internal Affairs and the many other Leningraders, who had to take part in the rescue operation. In the heavy helicopters under storm conditions the pilots hovered over the ice flows and lifted the frightened fishermen on board their crafts. /Text/ /Moscow TRUD in Russian 26 Apr 80 p 4/ 7807

CSO: 1824

## LIVESTOCK FEED PROCUREMENT

### IMPORTANCE OF FEED AS BASE FOR DEVELOPMENT OF LIVESTOCK BRANCH

Moscow PRAVDA in Russian 1 Apr 80 p 1

[Lead article: "Basis for Development of Animal Husbandry"]

[Text] The present period is a very busy one for the livestock breeders -- the period of indoor maintenance for the livestock is coming to a close. Thus, all measures must be undertaken to ensure that their productivity does not decrease and that a good foundation is laid for the successful fulfillment of the socialist obligations and plans for the final year of the five-year plan. The milk yields and weight increases are higher on those farms where greater amounts of forage are available and where it is utilized in a skilful manner.

During the July (1978) Plenum of the CPSU Central Committee, Comrade L.I. Brezhnev commented: "Everything that we wish to obtain from animal husbandry -- more meat, milk and other products -- is in the final analysis dependent upon sufficient feed being available, feed of diverse types and of high quality."

The country's forage resources are increasing. However, the volumes of forage procurements, especially hay, haylage, silage and root crops, are still not satisfying the increasing requirements of animal husbandry. The program prepared during the July Plenum of the CPSU Central Committee for developing the feed base is still not being carried out in a sufficiently energetic manner in a number of rayons. Thus the party, soviet and economic organizations must raise the requirement for ensuring that the farms are supplied with high quality internally produced forage.

Recently the CPSU Central Committee and the USSR Council of Ministers adopted the decree entitled "Additional Measures for Increasing the Production of Coarse and Succulent Feed During 1980 and Raising Their Quality." The rural workers and the party, soviet and agricultural organs have been assigned the task of making the very best use of the reserves that are available for raising the yields of hay, haylage, silage and root crops and of further strengthening the forage base. Towards this end, additional

amounts of equipment and materials are being made available and privileges are being extended with regard to the granting of loans for carrying out work and issuing labor incentives for feed procurements.

The kolkhozes and sovkhozes possess the potential required for creating a reliable supply of forage. They have vast areas of arable land, meadows and pastures. When efficient use is made of the land, many farms, for example those in Kiyevskaya Oblast, are obtaining 40-45 quintals of feed units per hectare. Many such examples can be cited. Nevertheless, skilful use is by no means being made of the reserves available in all areas. As mentioned in the decree, in the Mordovian ASSR and in Penzenskaya, Astrakhanskaya, Ternopol'skaya, Sumskaya and certain other oblasts, the average annual volumes of forage procurements during the current five-year plan, compared to the previous one, decreased or increased to only a negligible degree. Feed production is being carried out in a primitive manner in a number of areas. Quite often the grass yields are low and the pastures and haying lands are covered with undergrowth and are in need of improvement. Meanwhile, the plans for carrying out soil improvement work are not being implemented in all areas. One of the causes of low productivity in animal husbandry is the shortage of coarse and succulent feeds and it is the obligation of the farm leaders and specialists to achieve a considerable increase in the production of these feeds this season.

An equal amount of concern must also be displayed for the sown feed fields, since they also represent large reserves. For example, although many kolkhozes and sovkhozes in Uzbekistan are obtaining 120-150 quintals of alfalfa hay from an irrigated hectare, only one half this amount is being obtained under the same conditions in certain southern rayons of Kazakhstan and in the Turkmen SSR. More active use must be made of the experience of leading farms. When defining the crop structure prior to the commencement of the busy spring season, the agricultural specialists must determine the amount of forage required and the more productive crops must be planted. A bolder approach must be employed in expanding the areas for the growing of peas, alfalfa and soybeans, in the interest of covering the protein deficit, and secondary sowings must be employed, especially in the southern zone and under irrigation conditions. Special importance is being attached at the present time to allocating adequate quantities of fertilizer for use on the feed fields. In addition, the soil and the seed must be prepared well and the agrotechnical requirements must be observed in a very strict manner. The efforts of the farmers should be directed towards obtaining fodder as early as possible for providing a dressing for the livestock and achieving a considerable increase in the productivity of the livestock.

Opportunities are to be found everywhere for raising the culture of the forage fields and their yields. At the same time, some economic leaders are utilizing these fields to only a very weak degree and they are trying to compensate for derelictions in organizing the production of hay, silage and root crops through the excessive use of grain, quite often at the expense of the state resources. The party and soviet organizations must not tolerate

such practice. The growing material-technical base and the experience and knowledge possessed by the specialists and better farmers -- all of these factors must be directed towards accumulating maximum amounts of coarse and succulent feeds.

As mentioned during the November (1979) Plenum of the CPSU Central Committee, low feed quality and a lack of balance in the rations in terms of protein cause great harm to animal husbandry. According to data supplied by laboratories in Permskaya Oblast, for example, the procurements of hay, haylage and silage of the first and second grades constitute only slightly more than one third of the overall quantity being procured. Similar situations prevail in certain other oblasts. In commencing their sowing of forage crops in real earnest, the agronomists, zootechnicians and farm engineers must at the same time display concern for the timely harvesting of the crops. All measures must be undertaken at the present time to ensure that no delays are tolerated in the cutting down of the grasses and in the laying in of silage.

The task of raising the productivity of the fields and meadows and harvesting the crops in a timely manner represents only one half of the work. Importance is also attached to preserving the feed and preventing nutrient losses. Meanwhile, very few resources are being allocated in some ravens for the erection of reliable storehouses and the construction organizations are not handling the work volumes associated with the erection of the required storage facilities. Last year alone, the farms in the nonchernozem zone of the RSFSR failed to receive 1 million cubic meters of storage space for silage and haylage, erected on the basis of state investments. The rural areas are quite justified in expecting the farms to be properly supplied with highly productive units, synthetic film and different types of preservatives. It is the responsibility of the party organizations of the appropriate ministries and departments and plants to promote in an active manner the rapid mastering of the production of the entire complex of feed production equipment and resources.

One of the most important tasks confronting the rural party organizations is that of strengthening the forage base of the farms. The organizational and mass-political work being carried out by the communists must be subordinated to achieving this goal. The party committees and bureaus must actively employ moral and material incentives and mobilize all forces towards the creation of reliable supplies of feed. Each farm must be adequately supplied with diverse types of high quality forage.

## LIVESTOCK FEED PROCUREMENT

### BETTER FEED QUALITY AND UTILIZATION URGED

Kishinev SKL'SKOYE KHOZYAYSTVO MOLDAVII in Russian No 2, Feb 80 pp 8-11

[Article by G. Stepurin, doctor of agricultural sciences and professor of the Kishinev Agricultural Institute imeni M. V. Frunze, and N. Bakchivanzhi and V. Ignat'yev, candidates of agricultural sciences: "Improve the Quality and Efficiency of Feed Utilization"]

[Text] Republic animal husbandry workers have begun the last year of the Five-Year Plan. Actively engaged in All-Union socialist competition, they are filled with resolve to make a worthy contribution to carrying out the tasks planned by the 25th CPSU Congress and the July 1978 and November 1979 plenums of the CPSU Central Committee. In resolving these problems animal husbandry workers understand that the success of matters depends on guaranteeing the stability and dynamism of the pace of development of the industry as a whole.

Concrete success has been achieved in the development of animal husbandry in the republic during the years of the five-year plan which have elapsed. It has firmly set forth on the path of industrialization and concentration; as a result livestock productivity has risen -- milk output, the growth in the live mass of cattle being fattened, and the release mass of animals sold for meat increased. However, the rate of output of animal husbandry products, especially meat, is still lower than plan indicators.

It is the prime duty of animal husbandry leaders and specialists to carry out the decisions of the July 1978 Plenum of the CPSU Central Committee, which outlined concrete measures for the further development of the industry. To meet the plans and obligations projected for this year and for the five-year plan as a whole associations, kolkhozes, and sovkhozes have to increase significantly the volume of production and sale to the state of animal husbandry products.

The establishment of a stable feed base is one of the main conditions for the accelerated development of animal husbandry. Opportunities for expanding the area sown to feed crops are limited in the republic. Therefore, improvement of the area sown and an increase in yield by applying

advanced agricultural technology in raising them is the main way to increase feed production. However, an improvement in the efficiency in the utilization of the feed procured is as important as accumulating an adequate amount of feed.

The importance of the basic resolution of this problem can be graphically seen in the following example. A total of 1.4 to 1.5 kilograms of feed units (the norm is 1.2) is expended annually in the republic to produce one kilogram of milk. Consequently, the production of one million tons of milk involves the overexpenditure of 200,000 to 300,000 tons of feed units a year; to obtain this amount of feed at current productivity 50,000 to 60,000 hectares of land are required. A considerable overexpenditure of feed is also observed in the production of other animal husbandry products.

The main causes of reduced effectiveness of feed utilization are the low quality of feed, the lack of balance of energy, nutrients, and biologically active substances in the rations, shortcomings in the introduction of the recommendations of science and advanced experience in the technology of preparations for fattening and feed processing.

Practice shows that we can prepare from one and the same raw material feed which varies widely in its nutritional content. Thus, according to data from the agricultural chemistry service, one kilogram of vetch-oat hay procured in Kalarashskiy Rayon has the nutritional value of 0.57 kilograms of feed units, while one kilogram procured in Vulkaneshtskiy Rayon has the value of 0.37 kilograms of feed units. The production of one liter of milk required the feeding of 2.4 kilograms of hay in the first instance and 3.0 kilograms of hay in the second. In studies of the Moldavian Scientific Research Institute of Livestock Breeding and Veterinary Science one kilogram of grass meal prepared in the budding phase had a nutritional value of 0.77 kilograms of feed units, while this same alfalfa prepared at the mass flowering stage yielded only 0.6 kilograms. Naturally, the reduction in overall nutrition of these feeds was accompanied by a reduction in the amount of protein, minerals, and vitamins.

An increase in the amount of feed is a tremendous reserve for increasing the herd's productivity, the sale of which significantly increases the effectiveness of animal husbandry.

Moreover, the improvement in feed quality is the real path to reducing the expenditure of grain in the production of animal husbandry products. An analysis of the statistical data shows that in recent years the amount of concentrated feed in the structure of livestock rations has increased sharply: 22.2 percent in 1971 and 31.1 percent in 1977; each kilogram of milk required 323 and 425 grams, respectively. The main cause of this situation was a low quality of basic feed -- silage, hay, and haylage, which usually made up up to 70 percent of the total nutrition in winter

rations. From 61 to 63.5 percent of the silage, hay, and haylage procured for the 1977-1978 winter was of poor quality: the silage and haylage contained much butyric acid and little carotene; the hay had less protein and carotene than the norm; therefore, their nutritional value was below average. The main cause for low feed quality is violation of scientifically sound technology for procuring them.

The republic uses various methods of preserving green fodder -- natural and artificial drying, ensiling, chemical preservation, and the preparation of haylage. The effectiveness (if it is expressed in the nutritional value of one kilogram of dry substance of the prepared feed) of grass meal is 100 percent; feed preserved by chemical preparation, 86 percent; haylage, 79 percent; hay prepared by the active ventilation method, 72 percent; and ordinary hay, only 56 percent.

In all methods of preserving green mass an important factor promoting an improvement in feed quality is prompt harvesting of the grasses. It is common knowledge that as plants age a change takes place in their chemical composition -- there is a decline in the content of valuable nutrients and biogenic substances (protein, vitamins, and so forth) and an increase in the amount of difficult to digest, inactive substances ("raw" cellulose). Thus, according to data of the Moldavian Scientific Research Institute of Livestock Breeding and Veterinary Science, the dry substance of green alfalfa contains 25.5 percent "raw" protein in the budding stage, 19.6 percent during the flowering period, and 17.9 percent at the end of flowering. One kilogram of grass meal prepared from alfalfa in the budding stage had 0.77 kilograms of feed units, while it had only 0.48 kilograms at the end of flowering. (Calculated in dry matter) there was a loss of 290 kilograms of feed units for each ton of grass meal prepared from plants which had stood too long!

Over one million tons of haylage is procured in the republic annually, but its quality is very poor, even though primarily valuable legume grasses are used in making haylage. The main reason is failure to adhere to technology: they prepare haylage from undeveloped or inadequately developed grasses. For this reason the effect of "physiological dryness" is not manifest, and the ensiling does not take place inasmuch as the legumes behave as unensiled grasses. The feed spoils; a large amount of butyric acid accumulates in it, and it frequently becomes unfit even for fattening.

Therefore, one of the most important conditions for preparing haylage is strict adherence to technological requirements -- the sun-drying of grasses to the optimum moisture content. It is very important to carefully isolate the mass from access to air. The process of filling to capacity should not exceed 3 days. In this connection it is expedient to store haylage in trenches having a capacity of up to 1,000 tons of mass and to cover it carefully with film and a layer of earth. In case of bad weather

during the haylage making, it is necessary to have a reserve of organic acids to preserve the mass which is rained on (propionic, formic, and benzoic acids and others at the rate of 3 to 4 kilograms per ton of raw material).

A large amount of hay is laid in by the natural (sun) drying method. However, use of this method causes great losses in nutrients (35 to 40 percent). Such hay is only slightly better than good straw as far as nutrition and vitamin content are concerned. At the same time hay prepared by the active ventilation method is of high quality, and losses of its nutrients are cut almost in half. Therefore, hay, especially from legumes, must be prepared only by this progressive method, first sun-drying the cut grass in the field to a moisture content of 40 to 45 percent with subsequent drying in ricks with the aid of ventilators. Such hay must be stored on special sites under cover.

Of all the methods being used to preserve grasses, dehydrogenation (artificial desiccation) guarantees the best preservation of nutrients and biologically active substances. However, it must be remembered that it requires significant additional outlays of energy and fuel, and this means it should be used to preserve only grasses having the most valuable nutritional content, primarily legumes. Grass meal for poultry and hogs should be prepared from raw materials desiccated in drying devices; it should be used in mixed feed and feed mixtures as a source of valuable protein, carotene, and other substances animals need; grass cuttings should be prepared for ruminants and be fed mainly to young animals at a very early age and to pregnant dry and newly calved cows.

The question of improving silage quality has not been taken off the agenda. Silage is prepared mainly from corn in the republic. The main technological prerequisite for its ensiling is the rapid and careful isolation of the raw materials from the air. This is promoted by mincing the plants well (in the overall volume of raw material at least 80 to 90 percent of the pieces should be 30 millimeters in size), rapidly filling the silos (in no more than 3 days), packing the mass well, and covering it carefully with plastic (only if there is no plastic available may it be covered with wet straw cuttings and earth).

Properly selected harvest times assure an improvement in nutritional content and the quality of corn silage. The best time for harvesting is the phase when not less than two-thirds of the cobs have reached waxy ripeness and the rest are in the stage of milky-waxy ripeness; but ensiling must be completed when the grain is at waxy ripeness and the plants are green and succulent. Silage prepared from corn during the period when it is ripe has a moisture content of approximately 65 to 68 percent. There is practically no loss of nutrients at such a level of moisture, and the overall loss after being minced well and tamped is 25 percent less than in silage prepared from corn at the stage of milky-waxy ripeness.

Another reserve for replenishing supplies of silage is the cormophyte mass of corn after the ears have been harvested for grain. It is possible to make silage out of it only by mixing it with other moister feeds -- beet roots and tops, the green mass of sorghum, and the afterharvest of corn in a ratio such that the average moisture content of the raw material is approximately 65 percent. We should keep in mind that the tops of root crops are rich in nitrates which during the process of ensiling at first are reduced to nitrites, and then under the effect of carbon dioxide and acids reduce to nitric oxides which preserve feeds well.

The effectiveness of feed utilization depends to a considerable degree on the ration balance. A specific amount of energy, protein, and amino acids, easily fermentable carbohydrates, vitamins, and minerals should be supplied constantly to the animals in a unit of dry matter to obtain high productivity with the least expenditure of feed, to maintain health and reproductive functions in good condition. Highly productive animals, which are distinguished by exceptional intensity of metabolism and convert into the product a large amount of the plastic material supplied from the feed, are especially sensitive to a deficiency in one nutrient or another.

An analysis of the value of cattle and poultry feeding in the republic indicates that the feed rations of these animals are most often deficient in protein. As a result, there is not only a shortfall in output, but also a significant overexpenditure of feed. Typically, while overall protein deficiency in republic animal husbandry is 20 to 25 percent, definite contrasts may be observed by season of the year: for example, when feeding cattle during the summer period a feed unit has on the average of up to 130 grams of protein (the norm is 110), while in the winter it has only 75 to 80 grams. In specific summer months the rations have a great excess of feed protein.

The main way to resolve the protein problem in republic cattle and sheep raising lies in increasing the production and regulating the utilization of leguminous grasses. They should be used to the maximum to store up feed for the winter period when protein deficiency is acute. During the summer, along with legumes, we must use grassy feed, including perennial grasses. Such an approach makes it possible to balance rations better and to avoid the negative consequences of both a shortage and an excess of protein.

In feeding ruminants, in order to eliminate protein deficiency in the winter, we must make fuller use of synthetic substances which contain nitrogen -- carbamide and ammonium salts. It is more expedient to include them in the make-up of raw materials when ensiling corn (up to 0.5 percent) or to prepare a carbamide concentrate by extrusion -- an ammonium concentrate additive (AKD); the carbamide in its composition is used fully and very well by the animals.

Leguminous grasses may be used in a limited amount in hog and poultry rations because of their high cellulose content, and therefore they need

other sources of valuable protein -- grain legumes (especially soya and peas) and feed yeast. These feeds are marked by a high content of indispensable amino acids, thanks to which they approximate feeds of animal origin and can replace them. According to experiments of the Kishinev Agricultural Institute, the use of synthetic amino acids, in particular the feed concentrate lysine (KKL), is quite effective in guaranteeing valuable protein nutrition. Expansion of the production of soy, peas, and feed yeast and utilization of amino acid feed preparations can and should become an important means of increasing the productivity of hog and poultry raising.

The microflora which occupies the rumen plays a large role in converting and assimilating nutrients in ruminants. Easily fermented carbohydrates (sugar) present in large amounts in sugar beets, which are a good dietary and lactiferous feed, promote the creation of optimum conditions for its reproduction and vital activity. It is especially necessary for highly productive animals whose demand for sugar increases. For example, if a cow with a daily output of 10 kilograms of milk requires 800 grams of sugar a day, it requires 1,800 grams to produce 20 kilograms. We must remember that feed beets contain many hydropectins, from which the body forms uronic acids. Such acids are capable of inactivating harmful substances which form in the process of metabolism. Consequently the provision of beets is an important condition for maintaining the health and high productivity of the animals.

More attention also needs to be paid to mixed silage, especially in respect to feeding hogs. It serves as a source of vitamins, increases appetites, improves the process of digestion, promotes the issue of large, strong shots, increases lactescence, improves the growth of young animals, and also reduces the outlay of feed concentrates.

The demands on good silage are high: one kilogram must have a nutritional value of not less than 0.25 to 0.3 kilograms of feed units, not less than 25 to 30 grams of digestible protein, 20 to 40 milligrams of carotene, and not more than 4 to 6 percent cellulose. According to data of the Kishinev Agricultural Institute, the following amount of feeds (percentage by mass) may be included in the make-up of combined silage: 30 to 40 percent ears of corn at the waxy ripeness stage, 20 to 50 percent beets and beet tops, 20 to 40 percent gourds, up to 20 percent alfalfa, and 5 to 10 percent grass meal.

Concentrated feeds have an important role (over 50 percent) in the structure of the feed balance of public animal husbandry. However, they are being used without the necessary effectiveness. The greatest effect is achieved by including them in mixed feed enriched with nutrients and biologically active substances which are present in insufficient amounts. But, as you know, mixed feed now occupies no more than one half of the concentrate part of the rations. The rest must be fed in the form of

balanced feed mixes made up of green cereals (corn, barley, wheat), legumes (soya, peas), grass meal and vitamin-mineral supplements. Taking into account the local peculiarities of the chemical make-up of feeds, the following are required in preparing one kilogram of such a supplement: 0.99 grams of cobalt, 10.20 grams of copper, 19.07 grams of zinc, 1.65 grams of iodine, and 968.09 grams of filler (yeast). A total of 380 grams of such an additive is fed per 100 cows as part of the concentrated mix. According to the formula of the Moldavian Scientific Research Institute of Livestock Breeding and Veterinary Science, concentrated feeds fed to calves should contain a vitamin-mineral supplement composed of 0.50 grams of cobalt, 15.38 grams of copper, 74.56 grams of manganese, 0.49 grams of iodine, 36.31 grams of vitamin A (325,000 International Units per gram), 13.27 grams of vitamin D (220,000 International Units per gram), 23.67 grams of vitamin K, and 835.72 grams of (kormogrizina). It is dispensed at the rate of 84.5 grams per 100 calves up to the age of 6 months.

The preparation of feed for fattening plays an important role in increasing the effectiveness of feed utilization.

Feeds with low nutritional value, primarily straw, are especially necessary in preparing for fattening. Republic kolkhozes and sovkhozes annually lay in about 3 million tons of straw, 1.5 to 1.8 million being used for feed. Animals eat it poorly in its natural form; it has a low nutritional value, and therefore is considered ballast feed. Moreover, one kilogram of dry straw matter contains practically as much gross energy as the same amount of grain -- 4,300 to 4,400 kilocalories. The fact is that the energy of nutrients in straw are "bound" and in a state not easily accessible to the animal organism; therefore, its ratio of useful effect is one-fifth that of grain.

Straw must be prepared for fattening use by chemical and thermochemical processing, making it possible to increase its nutritional value 2 to 2.5 fold. The essence of this processing lies in the fact that the cellulose-lignin complex is broken down by the effect of caustic or calcined soda, lime, and ammonium hydroxide and cellulose is made more accessible to digestion by rumen microflora.

The following method is quite effective. The straw cuttings (just as in ensiling) are put into trenches and are wet down in layers (20 to 30 centimeters) with a prepared solution (15 kilograms of caustic soda, 15 kilograms of quick lime, and 10 to 15 kilograms of carbamide are dissolved in 1,000 liters of water). The dampened feed in the trenches is tightly packed (beginning with the first layer), and when the trench has been filled, the mass is carefully covered with wet straw and earth. The cellulose is freed from the lignin and cutin in such feed by the action of the alkalis, and the temperature of the mass rises to 50 degrees. As a result the nutritional value of the straw (calculated in dry form) increases from 0.2 to 0.4 or 0.5 kilograms of feed units, and its protein content increases to 25 grams per kilogram.

In the second method -- liming the straw -- they use 2 tons of water, 30 kilograms of quick lime, 10 to 15 kilograms of sodium chloride, and an equal amount of carbamide per ton of straw cuttings. The wet straw is steamed in special tanks for one and a half to 2 hours.

The overall and protein nutritional value of straw treated with ammonium hydroxide directly in the ricks (120 liters of ammonium hydroxide containing 25 percent ammonia are applied to one ton of wet straw) is increased to approximately the same level as in the methods described above. During the time of the treatment (4 to 5 days during the warm period of the year and up to 10 days during cold weather) the ricks are covered with a gas-tight plastic.

Attention should be directed to the experiment in the barohydrothermal treatment of straw (Gomel'skaya Oblast in the Belorussian SSR) in which dampened straw in bales is kept in special large-capacity autoclaves at a pressure of 6 atmospheres and a temperature of 150 to 160 degrees for 25 hours. Such a method increases the sugar content 15 percent and doubles nutritional value.

To increase the effectiveness of the feeding, it is expedient to use coarse feed subject to preliminary treatment in the make-up of multi-component mixtures of silage, root crops, and feed concentrates, with the addition of carbamide and the necessary mineral supplements.

The stability of straw can also be increased by including it (up to 30 percent) in the composition of briqueted and granulated feed mixes.

It is also important to utilize to the maximum other wastes of cropping besides straw and wastes from agricultural products processed by industry -- pulp, stalks, and calathides of sunflowers, grape and fruit residues, beer and wine sedimentation yeasts, malt sprouts, gluten, corn pulp, and residues from the essential oils industry and meat combines, slaughter houses, and dairies. Their total nutritional value for the republic is about one million tons of feed units annually, that is, approximately one fourth of the nutritional value of all feeds consumed in the republic. Their complete correct utilization should promote a further increase in the productivity of animal husbandry.

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## LIVESTOCK FEED PROCUREMENT

### STRAW AS UNTAPPED RESOURCE FOR CATTLE FEED

Moscow PRAVDA in Russian 14 Jan 80 p 2

[Article by T. Dubononov, senior instructor at the Kuban' Agricultural Institute, honored agronomist of RSFSR, and I. Lukin (nonstaff PRAVDA correspondent), Krasnodarskiy Kray: "A Stack of Straw"]

[Text] Wherever one travels at harvesting time, one sees stacks of straw everywhere on the fields. They extend in long lines behind the combines. At some farms, they are gathered immediately and taken to the farms, while at others they are just left there for the winter.

When the time comes to plant winter crops or plow the fields in the fall, the straw lets itself be remembered. It stands in the way of the plowing and sowing machines and forces the operators to make steep turns around it. How many weeds and pests find safe shelter in the stacks!

Just listen in on the conversations of supervisor and farm specialists in the harvesting season. Many of them complain: "There is no end to the problems with straw, nothing but trouble."

While the problem of mechanizing grain harvesting has been resolved in our country, we are not half way through with handling straw and chaff. One has only to see what is happening on the fields during harvesting to become convinced of this. The stacks of straw are pulled by the rakes, mixed with soil and leave twisted bundles on the strip, which cannot be torn apart by hand or plowed by machine. In many areas, the chaff simply scatters with the wind. Yet it is not significantly inferior to hay in nutrient value.

For several years now, all of the wheat and oat chaff has been gathered in Kuban'. The machine operators have equipped more than 15,000 combines with chaff collectors, and they obtain an additional 700,000-800,000 tons of feed annually. In the winter, the chaff is enriched with concentrates, vitamin supplements and it serves as a good aid in increasing cattle productivity. Now, barley chaff is also gathered there, and it is processed into granules.

However, the knowhow of the people of Kuban' is not being applied in all krays and oblasts. And is it worthwhile for each farm to invent the bicycle? Is it not simpler for plants to manufacture combines with chaff collectors. It is a strange situation: the machine builders hear out the claims of machine operators for years, but, as they say, they do not give a rap. Who then should take care of the machinery to gather the remainders on reaped fields? It would be enough to take half a ton of chaff from each hectare covered with cereal crops for the nation's farms to have an additional 50 million tons of nutritional feed.

At present, these millions of tons are disappearing without a trace. In some cases the straw stands for months, gets wet by the rain and rots. Feed which is acquiring increasing importance for the formation of the fodder base of cattle raising, is being destroyed. Occasionally, fires were set in an effort to get rid of the straw. There are specialists who try to justify such action by stating that this is how they control pests and diseases. Yet many years of experience have been acquired, and it shows that fire results in more pests, rather than less.

We recall the early years of development of virgin lands in Russko-Polyanskiy Rayon of Omskaya Oblast, when the rustic shoulder-knot moth [Apamea sordens Hufnagel] appeared. It was decided to destroy it by fire. After threshing, the cuttings and stubble were burned. What happened? The following year there were even more of these moths. This is what occurred: by destroying them, they also destroyed the useful insects that controlled the pests. Instead of being beneficial, the idea resulted in damage.

As far back as the 1930's, academicians D. N. Pryanishnikov and V. R. Vil'yams suggested that more efficient use be made of the residue after reaping. Pryanishnikov believed that some of the straw should be used in composts or as fertilizer. He cited the following data: 18 tons of cuttings in podzole soil yield a 1.9 centner increment per hectare of winter rye harvest and 4-9 centners more oats.

Experiments of recent years have confirmed this scientist's conclusions. An additional 2-3 centners of winter wheat grain were obtained per hectare to which 5 tons of straw were added. The farms in Leningradskiy Rayon of Krasnodarskiy Kray add millions of tons of manure to the soil annually. They make wide use of straw to process it. They cut the straw, add liquid manure, haul it and stack it on the edge of the fields and at plowing time they apply 30-40 tons per hectare. Hence the result: even last year, when the weather conditions here were poor, a mean of 32 centners of grain crops were harvested, which is 8-10 centners more than in neighboring rayons--Kushchevskiy, Krylovskiy and Pavlovskiy.

V. P. Sergeyko, first secretary of the Leningradskiy raykom, Hero of Socialist labor, tells us: "A million tons of organic fertilizer replaces

50,000-60,000 tons of mineral fertilizer. We never received such a quantity of mineral fertilizer, and apparently will not get it soon. Moreover, the effectiveness of manure is greater, while processing is cheaper and simpler. The only difficulty is in gathering the straw: we have no suitable machines. The straw has to be cut up and delivered to the farm in that form, or else immediately plowed in."

Now there are methods, the use of which makes it possible to transform straw into highly nutritional feed. Now, the nongrain part of the harvest becomes particularly valuable. However, in order to obtain this effect we need machinery. We need not only grinders, but the proper size wagons and standardized chaff collectors. Otherwise, the nongrain part of the harvest will be gathered by whatever means anyone devises.

In some countries, excellent paper is made of rice straw. In Kuban', for example, rice fields cover up to 176,000 hectares. This means there are hundreds of thousands of tons of straw. There is also quite a lot of straw in the rice paddies of Astrakhan', Crimea, Kazakhstan and the Far East. Virtually everywhere, the straw is simply brushed away. There is not enough manpower or equipment to gather it. One would think that the Ministry of the Paper and Pulp Industry should be interested in it. Its enterprises could collect millions of tons of raw material from the rice fields.

We should like to conclude this discussion about straw by saying that this is not simply dried out postreaping residue. This is feed, raw material for industry and a source for increasing soil fertility. This means that one should also use straw in a thrifty way with utmost effectiveness.

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## LIVESTOCK FEED PROCUREMENT

### USE OF STRAW FOR LIVESTOCK FEED URGED

[Editorial Report] Moscow TRUD in Russian on 27 February 1980 page 2 in a letter to the editor points up the value of straw as livestock feed. The letter from Gubkinskiy Rayon in Belgorodskaya Oblast, laments the fact that the straw remaining in the field after the grain has been mowed and thrashed is burned up with no regard for the fact that cattlemen then must send off to Orenburgskaya Oblast for straw, a distance of thousands of kilometers.

The writer goes on to make the distinction between the way this is handled in Belgorodskaya and neighboring Khar'kovskaya Oblast, where the combine is followed by a straw collector and valuable feed is not lost.

This is at least the third time during the recent winter that cattlemen in the RSFSR have been urged to look to straw to feed their animals. A December journal article and a January newspaper article, both from Krasnodar, carried a similar message. (Krasnodar SEL'SKIYE ZORI in Russian No 12, Dec 79 p 44; Moscow PRAVDA in Russian 14 Jan 80 p 2)

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## LIVESTOCK FEED PROCUREMENT

### BRIEFS

DENSER CORN STANDS URGED--In Kiev SIL'S'KI VISTI in Ukrainian on 26 April 1980, page 1, an article appears which turns its attention to production of corn for green mass, the production of which has expanded greatly in the Ukraine in recent years. "...However, the level of yield attained by this crop still does not correspond to that required for the establishment of a strong feed base for animal husbandry. A major untapped resource for increasing yields and improving feed quality is the implementation of technology for growing denser stands of this crop for silage, in conjunction with rationally early sowing dates." The remainder of the article is devoted to details of this new technology, which will be implemented on 285,000 hectares. [Editorial Report]

FROM WOOD PULP WASTE--Article by G. Gubanov, special correspondent of IZVESTIYA, Rostov-na-Donu--The group of scientists and students of Rostov Institute of Agricultural Machine Building has developed an automatic line that produces 150-200 tons per day of a pulp and vitamin meal that is good feed for animals. Waste from timber logging and coniferous tree branches are the raw material. The first such line is already working well at the kolkhoz imeni Chapayev in Rodionovo-Nesvetayskiy Rayon. [Text] [Moscow IZVESTIYA in Russian 2 Feb 80 p 3] 10,657

CONIFER MEAL IN FEED--Rostov-na-Donu, 16 Feb (Yu. Maksimenko, correspondent of SEL'SKAYA ZHIZN')--Thousands of hectares are covered by young conifer forests in northern parts of this oblast. When the waste is shopped there, a carotene-rich feed is processed from conifers. The kolkhozes and sovkhozes of Tarasovskiy Rayon, who organized processing of conifer "tips" in local forests, deliver tens of tons of green concentrate daily to the farms. At the Svetoch kolkhoz, the pine needles are ground on feed processing machines and added to coarse grain being steeped at hog farms and to chopped straw for dairy cows and cattle being fattened up. The farms have already received several thousand tons of conifer "tips" ("paws"?), and over a thousand tons of meal have been processed from them. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 17 Feb 80 p 2] 10,657

FEED FROM UNDERNEATH ICE--Yakutsk, 27 Feb 80 (V. Konarov, correspondent of SEL'SKAYA ZHIZN')--The sovkhoz imeni Suburuskly in Churapchinskij Rayon has organized recovery of sapropel [organic mud] from Aryy-Kyuyele, Oybon-Kyuyele and Oyun-Uulabhyte lakes. In this difficult winter, this feed supplement helps preserve productivity of cattle. It is also used extensively by horse breeders as a supplement for herds of horses that graze at liberty. Although recovery of sapropel is not a simple matter in Yakutiya, since it has to be collected from under one meter of ice, the practice of this sovkhoz is being followed in the entire republic. [Text] (Moscow SEL'SKAYA ZHIZN' in Russian 28 Feb 80 p 2) 10,657

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## LIVESTOCK

### REMODELING OF LIVESTOCK FARMS IN ZAPOROZH'YE

Moscow SEL'SKAYA ZhIZN' in Russian 17 Feb 80 p 2

[Article by A. Artyushin, deputy director of TeNIPTIMEZh, candidate of engineering sciences, and V. Rabshtyna, candidate of economic sciences, Zaporozh'ye: "Renodeling of Farms"]

[Text] A significant part of livestock production is still performed at many farms using obsolete equipment. The efficiency of their work can be improved by remodeling, expanding and replacing equipment.

Although remodeling requires less capital investment than new construction, it is still significant. It is very important to determine the maximum "allowance." The extent of expenses for remodeling depends to a decisive degree on the level of completion of the farms, availability of buildings needed for normal operation, installations, services and amenities.

It often costs more to erect additional facilities than actual remodeling. Thus, analysis of remodeling projects for a large number of dairy farms in the southern part of our country shows that the additional capital investment constitutes a mean of 58.5% of the cost of the facility being remodeled, including 12.3% for the remodeling proper. The cost per animal space usually increases by 1.5-2 times at remodeled farms, as compared to the figure before remodeling.

The cost per animal space established for new complexes could probably serve as a guideline for permissible capital investment for remodeling. In other words, the overall cost of farms to be remodeled, including the residual production funds used and additional capital investment, should not exceed the cost of new facilities of analogous capacity.

The greatest effectiveness is achieved at large farms, where remodeling is directed toward introduction of progressive technology, updating equipment and improving working conditions. For example, at the dairy complex of the Peremoga sovkhoz in Zaporozhskaya Oblast, conversion of buildings from tethered to untethered maintenance of cows cost 204 rubles per animal space. But at the Dnepro sovkhoz in Dnepropetrovskaya

Oblast, where it was necessary to add a feed processing shop, dairy unit, calving department, silage and tuber storage facilities and grazing areas, the remodeling cost was 835 rubles per animal space.

Of course, when remodeling existing farms one must create complete main and ancillary facilities and complexes equipped with all that is needed. But the list of such facilities must be comprehensively substantiated.

Low economic effectiveness of remodeling is inevitable at farms that do not have reserves for development, the necessary territory, feed base, water, electric power, personnel, conditions for utilization of production waste, or that require too large a capital investment.

There is no justification for the practice of small farms (100-200 head) of remodeling to expand the capacity to 800-1200 cows, i.e., virtually new farms are constructed under the guise of remodeling. This happened, in particular, at the Drushba kolkhoz in Krinichanskiy Rayon of Dnepropetrovskaya Oblast: the 200-cow dairy farm was remodeled to an 800-head capacity. There, the cost per animal space constituted about 2000 rubles, or over 14% more than in a new complex. In such cases, one should design and build new farms, and make use of existing facilities in them.

Efforts to expand production by means of different types of additions and special remodeling usually result in a negligible economic effect at the time the farm is put in operation and considerably greater cost of future remodeling. It is imperative to bear in mind that remodeling is a continuous process. One should redesign buildings from the standpoint of updating the main resources in the future. When remodeling and enlarging farms, one must not re-equip individual buildings without integrating them into a single complex. Remodeling should be based on plans and estimates prepared by design organizations, after in-depth technical and economic substantiation by means of variance evaluation of plans developed with consideration of scientific and technological advances.

Complex plans have been prepared in Zaporozhskaya, Dnepropetrovskaya, Rostovskaya and other oblasts in the southern part of country for development of livestock breeding on the basis of in-depth specialization and interfarm cooperation, introduction of progressive technology, new means of mechanization and scientific organization of labor. According to these plans, remodeling and enlargement of farms are being done at kolkhozes, sovkhozes and interfarm enterprises. The experience of these oblasts is indicative of the need to prepare plans in all areas for industrialization of livestock raising by means of farm remodeling.

When planning for new technology at remodeled facilities, one should be concerned in advance about selection and adjustment of animals to

the new upkeep, feeding and milking methods, and define the sources of addition and formation of the herd. Strict consideration of all these factors in good time made it possible for the cattle breeders at the Elita sovkhoz, Melitopol'skiy Rayon of Zaporozhskaya Oblast, to raise the productivity of cows at the remodeled farm from 3315 kg milk per year before remodeling to 3533 kg after it.

It is desirable to supplement the dairy herd at a remodeled farm with heifers and primipara from specialized enterprises with analogous maintenance technology. At large remodeled farms (800-1200 cows), year round stall maintenance is desirable. The grazing and feed areas and cattle trails should have a hard surface cover. At medium-sized farms (600 cows), the combined upkeep method is more suitable: stalls in the winter, camp method in the summer, the animals grazing on green feed in corals or driven out to pasture and given a concentrate supplement in specially equipped areas. Special feed processing shops are needed at large farms to prepare the feed for distribution; at small and medium-sized farms, one can manage with feed distributor-mixers.

When converting farms to tethered maintenance, it is desirable to milk the cows using ADM-8A and M-620 machines, with collection of milk through milk pipes. One can also use milking areas with Tandem, UDT-6, Yelochka and UDYe-8 machines. In these cases, milking is combined with outings, and group tethers, type OSK-25A, are installed in the barns. The use of milking areas at farms with tethered cow maintenance increases the efficiency of the milking machines, creates better working conditions for milking machine operators, increases productivity of labor and improves the quality of milk.

With untethered maintenance, milking is performed only in the milking areas using type UDT-6 and UDYe-8 machines. When remodeling medium-sized farms, the milking machines are located in the additions to barns or passages between them. At large farms, construction of standard milking and dairy units is highly effective. A Tandem type installation is desirable at farms with a heterogeneous herd with respect to productivity and rate of milk yield. Yelochka is desirable for continuous [flow] group milking of cows that are homogeneous in these respects.

Industrialization of farms by means of remodeling is definitely not keeping up with current needs. This is attributable to several causes. Not infrequently, it happens that agricultural enterprises give orders for technicoeconomic substantiation, plans and estimates for remodeling, then fail to make use of them after they are prepared. For example, our institute issued documentation for remodeling of the dairy farm at the Pobeda sovkhoz, Borispol'skiy Rayon of Kiev Oblast, as far back as 1977. Implementation of the plan guaranteed an annual economic effect of 113,000 rubles. But to this day, milk is produced at that farm using obsolete technology which brings losses.

Remodeling is often delayed because of poor delivery of intrafarm machines and equipment to kolkhozes and sovkhozes, and even more often due to inadequate limit on contractor work. The kolkhoz imeni Lenin in Solonyanskiy Rayon, Dnepropetrovskaya Oblast, was issued plans and estimates for remodeling of the dairy farm into a complex to raise heifers in early 1977. In 3 years, the contractor, Oblmezhkolkhosstroy, remodeled only 2 out of 14 buildings. If work continues at this pace, the remodeling will be completed in 14 years....

Also in 1977, plans and estimates were issued for remodeling the dairy farm at the Chayka sovkhoz in Chernigovskaya Oblast and in 1978 to the Progress kolkhoz in Solonyanskiy Rayon, Dnepropetrovskaya Oblast. Because of the lack of machinery and equipment, construction work has not been started to this day.

The main conclusion to be derived from this is that one should provide for special purpose allocation of funds for new construction and remodeling when making plans for capital investments on all levels. The system of material and technical supply should guarantee delivery of the necessary resources to implement these plans, while building organizations should guarantee the performance of planned work expeditiously.

At our institute, methodological recommendations were published in 1977 for preparation of remodeling plans for livestock farms. The technico-economic substantiations and planning-estimate documentation were prepared for remodeling standard dairy, fattening and heifer farms. On this basis, we shall expand methodological assistance to concerned kolkhozes, sovkhozes, interfarm enterprises and planning organizations.

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## LIVESTOCK

UDC: 631.223.2

### REMODELING OF LIVESTOCK FARMS IN LIPETSKAYA OBLAST

Krasnodar SEL'SKIYE ZORI in Russian No 10, Oct 79 pp 44-46

(Article by N. Rakitin, chief engineer of the Central Chernozem Production Engineering section of the Rossel'khozNOPTU [expansion unknown] Center: "Via Remodeling")

[Text] Strengthening the material and technical base of livestock farming has a beneficial effect on processes of industrialization of this laborious sector. The transfer of meat, dairy, egg and wool production to an industrial footing is being implemented by the construction of new, large, specialized enterprises and by means of remodeling farms. As shown by progressive knowhow, the cheapest and easiest way is to re-equip buildings, provide conditions in them for the use of progressive technology and scientific organization of labor.

Deeper specialization, introduction of new systems of machinery and expansion of farms to their optimum size constitute the basis for increasing the effectiveness of production by remodeling farms. Then production will increase both as a result of increased capacity of buildings and increased productivity of animals due to improved upkeep and feeding conditions. For this reason, in the current 1976-1980 catalogue of systems of machinery for livestock farming, there are the technical resources for farms and complexes under construction or being remodeled. Introduction thereof will reduce to one-half the amount of former labor and by 35-50% the operational cost. However, in order to achieve a good result, it is imperative to enlarge farms, upgrade organization of labor and management. For rationalization of production and labor, one needs to take complete and profound consideration of local conditions. This is particularly important at the stage of development of the organizational plan for farms to be remodeled.

The example of the agricultural experimental station in Lipetskaya Oblast is demonstrative. The change of dairy cattle farming to industrial technology is being made here in the following direction: improved reproduction of the herd and pedigree work, creation of a solid feed . . . ,

remodeling of farm buildings in order to implement complex mechanization of laborious processes, and introduction of progressive forms of organization of labor.

Industrial specialists, scientists, designers as well as farm efficiency experts ("rationalizers") were involved in preparation and introduction of these measures. Before remodeling the buildings, they selected and substantiated the optimum variants of mechanization, devoting special attention to reduction of manual labor spent on ancillary technological processes, in particular loading-unloading and transport operations. While the grain had been carried to the crushing machines by operators, put in sacks manually, loaded into transport vehicles and unloaded from them by hand before the feed shop was remodeled, now the efficiency experts at the farm introduced a pneumatic conveyer to deliver concentrates from the warehouse to the processing site. At their suggestion, bulk delivery of concentrates [unpackaged] to the barns was practiced, for which purpose a ZSA-40 sowing machine loader, mounted on the chassis of a GAZ-53 car, was used. Before being fed to the cattle, the fodder is enriched with yeast on an installation, also made by the skilled farm workers.

The technological cycle of processing, transporting and dispensing feed now proceeds in the following order: warehouse--pneumatic conveyer--crusher--bucket elevator--ZSA-40--yeast enrichment shop. After yeast enrichment, liquid feed is dispensed into the feeders by means of a ZZhv-1,8 attached to a tractor. It was necessary to revise and alter the interior lay-out of the buildings and widen the feed passages in order to use the mobile distributors in cases where the dairy herd is kept on tethers. As a result of the work that was done, labor expended on processing and distributing concentrates decreased from 3.12 to 1.45 min per animal.

In the course of remodeling the dairy farm, a centralized vacuum installation was created. For this purpose, the vacuum lines from four AD-100 were combined into one centralized one. This reduced the number of pumps in operation, as well as number of service personnel.

A special shop with continuous type of technology was organized for primary processing of milk. The productivity of the line is 3 tons/h. The milk arriving from the cow barns is separated, the cream is pasteurized and refrigerated.

Manure is removed from the barns by TSN-2 transporters [conveyers], loaded in motor vehicles and carried to the storage place.

Preventive maintenance and operational overhaul of farm machines are performed by the staff of the technical servicing center.

The new lay-out of the buildings increased the capacity of the cow barns by 13%.

Let us mention that all of the technological processes at the farm are now being performed by a set of series produced machines. Thanks to mechanization of laborious processes, the continuous cycle of production and profound separation of labor, the farm has adopted a two-shift work and rest schedule. The work day of milking machine operators does not exceed 7 h.

Progressive organization of production, creation of a solid feed base and constant upgrading of productive qualities of animals by means of purposeful pedigree breeding work have increased significantly the economic effectiveness of dairy cattle farming. The productivity of cows has increased by 10%, labor expenditure has decreased by 28% and cost of production has dropped by 12% (see Table).

Indices	Economic effectiveness of remodeling a dairy farm	
	Before remodeling	After remodeling
Number of spaces for cattle	766	866
Milk productivity of cows, kg	3094	3408
Overall milk production, centners	23700	29516
Additional capital investment for remodeling:		
total, thousands of rubles	--	95.8
per animal, rubles	--	110.4
Annual expenditure per animal, man-hours	260.46	215.85
Labor for milk production, man-hours/centner	8.41	6.04
Work load per worker, head of cattle	9.8	12
Operating expenses, rubles:		
total	308.1	266.8
breakdown: compensation for labor	229.2	191.13
depreciation and routine repair of buildings and machines	58.24	56.96
Reduction of annual operating expenses, %	--	13.4
Direct expenses on milk production, rubles/centner	17.15	15.19
Annual savings in operating expenses, rubles	--	21399
Return of additional capital investment as a result of savings in operating expenses, years	--	2.67

Analysis of the work done at the farm shows that not all of the reserves for increasing the effectiveness of milk production have been used as yet. With the existing upkeep methods, one of the chief ones is to refine the milking system. At the present time, each operator spends at least 6 h to milk 50-60 cows, whereas one can raise the productivity of their labor by 30% with more refined dairy equipment (low vacuum) and, at the same time, lower the probability of mastitis among the cows.

The experience of remodeling the farm revealed that a high effectiveness is obtained from changing to milk production on an industrial basis

only if there is complex implementation of technical-technological and organizational-economic elements in the system of managing this sector.

In Lipetskaya Oblast, where the cost per centner of milk and labor are still high, it is imperative to pursue remodeling, expansion and specialization of farms on a broader scale. At the present time, only 41.1% of the cows are kept in complexly mechanized buildings. In essence, this process is being slowed down by the small size of buildings and existence of small farms. Thus, according to the registration data, 61% of the animals are in barns with a capacity of less than 150 head and 23% in barns with a 200-head capacity. Yet the studies of scientists, estimates of specialists and knowhow of progressive farms convince us that the optimum size of a dairy herd in the Central Chernozem economic region should be in the range of 600-800 cows. Consequently, remodeling of the dairy farms should be associated with an increase in herd size to the recommended levels.

The choice of method of maintaining animals in the remodeled buildings ultimately has an influence on effectiveness of this sector also. For farms with a solid feed base and properly bred herd, the untethered and untethered-stall methods are desirable. But good results are also obtained when the cattle is kept in stalls with introduction of industrial production methods. Thus, with such maintenance, the labor expended per centner of production and cost thereof are 29.8 and 7.8% lower, respectively, in industrial complexes using this method of maintenance, and the work load per operator is double the average for Lipetskaya Oblast.

When substantiating plans for remodeling, one must not overlook loading-unloading work, distribution of coarse, succulent and concentrated feed. At the dairy farms of this oblast, these processes are only 41.7% mechanized. In this area, we can also follow the example of the livestock farmers at the Lipetskaya Oblast experimental agricultural station who have set up a line for the processing of concentrates. It is a more complicated matter with respect to processing of coarse fodder. The steam chambers and revolving containers used at most farms are not refined, they require a significant expenditure of labor and their productivity is low. This results in lack of coordination between the productivity of some machines on the feed processing lines and distributors. At the present time, one should aim at such progressive methods of processing fodder as preforming pellets, granulation and preparation of homogeneous feed mixes, which is being done with success, for example, at the Lipetsk and Dryazginsk experimental stations, at the Nikol'skiy, Storozhevskiy and other sovkhozes.

The level of mechanization of milking is rather high in this oblast (91.4%). But there are still not enough group milking machines, which reduce labor and resources by 25-30%, as compared to lined up machines. Most often the farms implement centralization of the vacuum systems. Thus, the

expenses for maintenance of such vacuum ducts have been reduced to one-half the former level, and a repairman [mechanic] services 600-800 cows instead of 400 at the dairy complexes of the Krasnyy goryak and Peskovatskiy sovkhozes in Gryazinskiy Rayon. The coefficient of the work load of mechanics at farms with decentralized vacuum systems is 0.56 and with centralized ones it is 0.9. The latter type of system is more stable in operation and there is less fluctuation of vacuum.

The quality of the milk and operator working conditions are better when cows are milked by the group method in special rooms. For this reason, in the future this should be the main method of milking, particularly in view of the shortage of livestock farmers at kolkhozes and sovkhozes.

Industrial technology has not only an economic, but a social effect. Industrial organization of labor and maximum conveniences for service personnel will aid in attracting young people to farms. When installing equipment and machines, one must strive to create the most beneficial conditions for all workers. At many farms, for example, it is uncomfortable for mechanics and electricians to work, since the pumps of the milking machines and electric motors are on the floor. Occasionally, equipment and automated control devices for the machinery are installed beyond the field of worker vision.

When farms are remodeled one has to convert some buildings for new machinery, and when difficulties arise the aid and suggestions of efficiency experts [rationalizers] are priceless. Experience has shown that most rationalization proposals substantiated by engineering estimates yield positive effects. For example, thanks to introduction of rationalization proposals at the Lipetsk experimental agricultural station, such laborious processes as bulk transportation of concentrates by the ZSA-40 sowing machine loader, delivery of forage grain to the crusher by a pneumatic conveyer and drying grain with a remodeled feed distributor have been performed for 6 years without manual labor.

Highly productive operation of machinery is possible only when specialized technical maintenance centers are organized. For this reason, when substantiating a remodeling plan, it is imperative to provide for such centers and make early plans to train engineering and technical personnel.

Goskomsel'khoztekhnika [State Committee for Agricultural Technology] performs some of the work dealing with servicing of milking machines and other machinery in the Central Chernozem region. Thus, in Lipetskaya Oblast, 72% of the farms are serviced by this committee. This is efficient and convenient. For example, a unit of four well-trained mechanics [trouble shooters] at the Lipetsk experimental station, which has a technical maintenance center at its disposal, provides for reliable operation of all of the farm machinery over the year. The Goskomsel'khoztekhnika department implements only technical servicing

monthly for the milking machines. Before the technical maintenance center was organized, there were eight mechanics to take care of the machinery.

The scope of remodeling work on dairy farms of Lipetskaya Oblast, which is planned for this year, amounts to about 1.2 million rubles, and it is being done with success. In 1980, it will increase by another 25%. For this reason, we recommend that measures be provided and developed for refining the system of feed production, storage and processing of fodder for feeding, improvement of herd reproduction and consideration in advance of all progressive elements of organization of production and labor before remodeling production buildings and ancillary buildings, as a mandatory preliminary step.

Only a complex approach, proper substantiation and choice of all technological and organizational-economic elements will aid in converting the dairy industry to an industrial basis, which will increase its effectiveness, lower the cost for labor and means of production.

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## REGIONAL DEVELOPMENT

### APPLYING COMPLEX LIQUID FERTILIZERS IN NONCHERNOZEM ZONE

Minsk SEL'SKAYA in Russian 10 Apr 80 p 2

[Article by Candidate of Technical Sciences V. Andrushchuk, senior scientific staff member, USSR Central Scientific-Research Institute for the Mechanization and Electrification of Agriculture in the Nonchernozem Zone, under rubric "Scientific Advise": "Complex Liquid Fertilizers: How To Use Them"]

[Text] Last year, a number of farms in our republic received their first 10-34-0 brand base solution of complex liquid fertilizer ZhKU. It contains 10 percent nitrogen and 34 percent phosphorus. Its main advantage over ammonia water is that it is a two-component fertilizer, has a higher concentration of nutrients, and does not contain any volatile ammonia. Machinery operators can work with it without individual protection devices, and the liquid can be applied to the surface of the soil. Compared to direct embedding of ammonia water in the topsoil, machines applying ZhKU are several times more efficient. This is very important in shortening field operation times.

At present, the farms do not have special machinery for applying ZhKU. Under last year's unfavorable conditions, however, the machinery operators of Minskaya, Gomel'skaya, and Grodno'skaya oblasts showed initiative and retrofitted their available machines to apply 50,000 tons of base solution. Soyuz, Pamyat' Lenina, Pobeda, Chyrvonaya Belarus', and imeni XXII S"yezd KPSS kolkhozes, Dmitrovichi Sovkhoz, and other farms in Berezhinskiy Rayon applied ZhKU with sprayers, water dispensers, and liquid organic fertilizer spreaders outfitted with booms. The base liquid was kept in empty ammonia and fuel-lubricant containers that had been cleaned and rinsed. They were filled to not more than 70 percent of capacity.

It is worth while to pay attention to science of machinery operators of Berezhinskiy Ray sel'khoste in retooling RZhT-8 broadcast-spreaders, using pumping equipment from top-dresser-sprayers

and 16-meter booms made from 32-millimeter pipe. To reduce oscillations and boom breakdowns, use was made of cable suspension and side clamps. Special deflector atomizers with 3-millimeter openings were installed every 1.4 meters along the boom. Thanks to its large capacity, the spreader can operate for 3 to 3.5 hours on one filling. This retooled RZhT-8 is 2.5 times more productive than the top-dresser-sprayer.

Before starting work, the machines' tanks must be cleaned and rinsed and the equipment must be checked for good condition and adjusted to apply the proper dosage. In applying the base liquid it is necessary to use straight-line or transloading technology, delivering the fertilizer in truck or tractor-drawn tanks. After surface spraying with a small overlap (not more than 20 centimeters) of adjacent swaths, the ZhKU is embedded in the soil by means of a harrow, cultivator, or plow (no embedding on meadows, pastures, and grain crops). The base solution can be applied in inter-row cultivation and top dressing of row crops.

Times and dosages of ZhKU are about the same as with other kinds of fertilizers. But autumn application of the base solution to light soils is much inferior to springtime application because of partial leaching from the topsoil. Phosphorus dosages are set at 60 to 90 kilograms of active ingredient per hectare. Dosages are adjusted depending on the planned yield, the crop being cultivated, and the soil's agrochemical properties. In dosage by weight, 100 kilograms of the base solution contain 10 kilograms of nitrogen and 34 of phosphorus. Approximate dosages of ZhKU for potatoes, sugar beets, root fodder crops, and corn are 250 to 300 kilograms per hectare; for other crops, 200. Deficient quantities of nitrogen and potassium are applied in the form of solid fertilizers at the usual times. Crop yield gains from solid and liquid complex fertilizers are practically identical.

Last year's experience indicates that a number of farms do not know how to work properly with the base solution and are ignoring its characteristics. It is wrong to pour it into tanks containing ammonia water residues, to store it in the open, or to operate the machinery without flushing the systems at the end of the shift; such practices lead to thickening and crystallization of the solution, which clogs the pipes and atomizers with insoluble deposits. Filter nets must be installed in the filling neck, the pressure lines, and the intake hose.

The base liquid is 1.4 times heavier than water. If the tanks are filled to the top, the walls will be deformed; if they are not full, they will tip over at the turns because of the absence of additional partitions and excessive speed of motion. ZhKU should not be applied when there is snow on the ground or on peat dust or compost.

The USSR Central Scientific-Research Institute for Mechanization and Electrification of Agriculture in the Nonchernozem Zone has developed

• small-sized attachment for the RZhT-4 and RZhT-8 spreaders (weight 27 kilograms, length 2.7 meters) for applying ZhKU in swaths of 15 meters or more. The implement is connected to the discharge nozzle of the spreader. It can be made right on the farm. In the near future an experimental test of this tool will be carried out in all oblasts of the republic.

This year, the republic's farms are to apply 90,000 tons of ZhKU to the soil. It is essential to prepare the available equipment carefully in order to do the work properly and on time.

The use of the ZhKU, compared with mineral fertilizers, makes it possible to completely mechanize loading and unloading operations and reduce labor outlays by 30 to 35 percent.

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## REGIONAL DEVELOPMENT

### DESIGNING FARM MACHINERY TO PROTECT ENVIRONMENT

Minsk ZVYASDA in Belorussian 17 Apr 80 p 2

[Article by N. Makeyev, senior engineer, division of organization and adoption of scientific developments, Central Scientific-Research Institute "Mechanization of Agriculture in the Nonchernozem Zone, under rubric "The Scientist and the Five-Year Plan": "Without Damaging the Environment"]

Text] Recently, laboratory collectives of the Central Scientific-Research Institute of Mechanization of Agriculture in the Nonchernozem Zone reported to the science councils. And at each meeting, the focus of attention was on environmental protection. It could not be otherwise, because any time we develop a new machine to cultivate the soil or propose a new technology we inevitably impinge on the environment. It is vital, therefore, that this incursion be rational so as not to disrupt the balance of nature.

Machinery designed to cultivate the soil must protect it against water, wind, and mechanical erosion. These three types of erosion frequently take place on the same land, thus worsening the overall damage. In this republic almost half the arable land is on hillsides. To protect it against destruction, our institute and other research institutions have proposed a new plowing technology. It involves the use of plows with sweep blades which retain the stubble. With this type of cultivation the moisture is absorbed intensively, so that plants develop better. Industry is already turning out blades for one make of plow, and blades for another make are included in the machinery system plan for 1981-1990.

For soil cultivation on hillsides, the institute's staff has also developed a special anti-erosion attachment. On fields that have been cultivated to loosen the soil, the attachment makes small intermittent ridges. These serve to retain the moisture. This innovation was developed on Sovkhoz imeni Ul'yanov in Minskiy Rayon, and it has proven its effectiveness. The implement has successfully passed state tests, and the joint scientific-technical council of the USSR Ministry of

Agriculture, the Ministry of Agricultural Machine Building, and the USSR Goskomsel'khostekhnika have given it the go-ahead for series production.

For the maintenance of hillside meadows and pastures, flat needle disks have been developed for heavy furrows. They loosen the soil very well, which prevents water runoff and fertilizer erosion. A production inspection on the republic's farms has shown that the new implement boosts grass crop yields by 2.7 quintals per hectare on the first mowing and 13.7 on the second. Disks for anti-erosion soil cultivation are also recommended for general use.

One of the main requirements in erosion control during planting is to create a wind-resistant soil surface after the seeding machine has passed over it. This is achieved through the use of conical drill-coulters, which in addition prevent packing on mineralized soils. Another uncomplicated, easily removable tool for grain seeders also prevents pre-planting packing and leveling of the soil. Moreover, these mechanisms make it possible to avoid excessive pressure on the soil by the wheels of tractors and other machinery which tend to pack and destroy the soil structure. It has been estimated that in a year's time, one and the same place in a field will be "worked over" up to 40 times by tractor wheels.

In Belorussia, hundreds of thousands of hectares of arable land are yearly subjected to periodic excessive moisture. The heavy mechanical composition of the soil retains both thaw and rain water, which does not penetrate deeply but remains on the surface. This often leads to soaking of the crops.. If the water stays on the surface of a winter-crop field for just one or two days, the harvest yield will drop substantially. Experience proves that the most effective means of protecting the crop is to ridge the soil. To mechanize this operation, our institute collaborated with the Special Design Bureau of the Odessa Plant imeni Oktyabr'skaya Revolyutsiya to develop a ridge-maker.

For purposes of strengthening the sides of drainage canals and levees our institute collaborated with the Dornash Special Design Bureau to develop a special hydro-seeder. Its tank is filled with a mixture of grass seed, a special filler, and water. After vigorous blending the mix is jetted onto the canal banks. The seed attaches to the soil and sprouts. To cope with water erosion better and, if necessary, build up moisture reserves, our institute has developed a three-row ripper and mole-plow ripper. The use of them boosts farm crop yields by 20 to 25 percent.

It is very important to the economy to protect plants against diseases. Staff members of the institute have designed machines which make it possible to treat crops quickly, efficiently, and without large applications of chemicals. In collaboration with the Belorussian Scientific-Research Institute of Plant Protection, a test of new technologies and

machinery for treating potato seed was carried out at the Novyye Zyalenki Experimental Base in Chervenskiy Rayon. It turned out that the operation now requires only a tenth as much operative liquid, and crop yields after treatment are increased by more than 50 quintals per hectare.

The institute's farm machinery repair division has set up a machinery washing station. The cleaning facilities are provided with two waste water recovery lines. After being used to remove organic and mineral fertilizers and poison chemicals, the water is drained into a special section of the settling tank.

Intensive efforts are underway in the livestock farming sector as well. A special complex for disinfecting manure has been built on Baraulyany Sovkhoz (Minskay Rayon). The economic effect from its use on a farm which keeps 108,000 hogs adds up to more than one million rubles a year.

The institute's experience shows that it is possible to develop highly-productive machinery and equipment which not only avoids damaging the environment but also protects it. It is important to make the most efficient and widespread possible use of it.

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CSO: 1824

## TILLING AND CROPPING TECHNOLOGY

### ACADEMICIAN OFFERS ADVICE ON TOP-DRESSING

Moscow SEL'SKAYA ZHIZN' in Russian 12 Apr 80 p 2

[Article by Academician V. N. Remeslo: "Special Features of Winter Crop Top-Dressing"]

[Text] Spring has been quite late almost everywhere. Therefore, winter wheat vegetation has regenerated later than usual in zones where it is raised.

Currently our approach must mandatorily be creative in selecting agricultural measures for caring for the winter grains. It is very important to take into consideration in each concrete case the condition of the sowings and the agro-ecological conditions for their development. For this we need first of all to inspect each field carefully so as to know for sure at the time of vegetation renewal the scope and nature of the damage or destruction of the plants and decide correctly what measures must be adopted to obtain the planned yield of grain.

Normally developed plants, especially on areas insufficiently dressed with fertilizers should be top-dressed during the period of vegetation renewal with nitrogen fertilizers at the rate of 30 kilograms of active substance per hectare. It is also desirable to apply the same amount of nitrogen again by disc seeders, that is, to apply the top-dressing at the roots.

Experiments at the Mironovskiy Scientific Research Institute of Wheat Selection and Seed-Growing established that in the last 3 years the increment in the yield of Il'ichevka wheat sown without basic fertilizer after peas for grain was 6.4 quintals per hectare from surface top-dressing with nitrogen early in the spring and 9.4 quintals from the same amount of nitrogen (30 kilograms a hectare) applied to the roots. When the same applications of nitrogen were applied twice (by the surface method early in the spring and later by disc seeders), the increase in the grain yield reached 13 quintals.

Well developed plantings should be top-dressed only at the roots. If it is not possible to apply fertilizers by seeders, the use of airplanes will

be effective, but only after the end of spring tillering, at the beginning of shooting (when the first stem node can be felt).

Thinned and inadequately developed plants subject to repair need not be top-dressed in the early spring. Such plots should be opportunely undersown or resown with barley with a single application of a complete mineral fertilizer in the rows.

In connection with the fact that because of prolonged ice encrustation there will be "bald spots" in individual areas, the necessary number of seeders should be converted, using the method of the machine operators in Cherkasskaya and Kiyevskaya oblasts. With the aid of such units we can top-dress the plantings with fertilizers and, on plots where they have died, include the sowing of seed along the path of these units.

A few words about phosphorous-potassium fertilizers. The research of our institute has shown that their effectiveness is considerably lower in the spring than in the fall (before the sowing). On plots of winter crops raised after peas for grain the application by the surface method of 30 kilograms of active substance of phosphorous and an equal amount of potassium produces an increment in the yield of a total of 1.9 quintals per hectare, while these fertilizers applied by disc seeders produce an increment of 3.8 quintals. No perceptible increment is obtained from early spring applications of phosphorous-potassium fertilizers to winter wheat sown after corn for silage.

Inasmuch as it is possible to obtain good results from single nitrogen fertilizers (and also taking into consideration the late renewal of vegetation of winter crops), it is better to use available reserves of phosphorous and potassium fertilizers for sowing in the rows of spring grain crops.

As our research has shown, a moderate nitrogen feeding is necessary at the initial period of winter wheat development, and a larger feeding during the late phases of vegetation when it corresponds to the maximum increase in plant productivity. In 1978 the application of nitrogen fertilizers at the stage of shooting and ear formation assured a per hectare yield of 78.5 quintals of winter wheat of the Il'ichevka variety after peas sown for grain and 71.7 quintals after corn sown for silage. The increment totaled 14 and 21.3 quintals, respectively.

Typically even under last year's drought conditions nitrogen fertilizers applied at the late phases of winter wheat vegetation did not yield in effectiveness to those applied prior to sowing. According to data from the All-Union Selection and Genetics Institute, under the conditions of Odesskaya Oblast, the application of nitrogen at the stage of plant shooting and ear formation in the Priboy and Odesskaya-51 varieties (after bare fallow) was much more effective than when applied before sowing.

With such a fertiliser system nitrogen fertilizers (at the rate of 30 to 50 kilograms of active substance per hectare) should be applied by the root method at the end of spring tillering of the plants, and again (at the rate of 50 to 60 kilograms per hectare) by airplane at the beginning of ear formation.

The proper top-dressing of winter plantings is an important prerequisite for an increase in yields and gross grain harvests on the farms.

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## TILLING AND CROPPING TECHNOLOGY

### BUCKWHEAT CULTIVATION ENCOURAGED

#### Cultivation in RSFSR

Moscow SOVETSKAYA ROSSIYA in Russian 6 Apr 80 pp 1-2

Article by M. Zaripov (Kazan'-Moscow): "It Is Bleak for Buckwheat"

Text In 32 years of work Natal'ya Nikolayevna Petelina has developed five varieties of buckwheat. In Tataria, where the breeder came 13 years ago, they take up 90 percent of the fields of the autonomous republic, which are sown with this crop, having supplanted the previous low-yielding varieties. It is a rare, exceptional case for buckwheat. From Aznakayevskiy Rayon Natal'ya Nikolayevna was sent the following message of appreciation: "All the kolkhozes and sovkhozes will sow Krasnostreletskaya on an area of not less than 1,000 hectares. Thank you very much for the good variety!"

The other varieties--Prikamskaya, Troyanda and Sokurovskaya--have been turned over for testing and propagation and are making their way into the mass fields. The restless agronomists are sowing new plots with them and are reporting excellent results.

Our conversation with Natal'ya Nikolayevna at a small laboratory of the Tatar Scientific Research Institute of Agriculture began with reflections about the buckwheat field of Russia. If I am to be more precise, with her question, had I had time to eat lunch? In turn I inquired, what were they serving in the dining room today: goulash with buckwheat, buckwheat pie, pudding, buckwheat pudding with curd?

"Oh, you don't say?!" Natal'ya Nikolayevna flung up her hands. "Where does it come from, the buckwheat? From time immemorial the buckwheat region, the Northwest, did not sow buckwheat, but after all the hospitable merchants of the master of Novgorod treated their partners--the Hanza negotiators--to 'northern rice.' The fine Mikula Selyaninovich plowed the field on a rusty sickle and buckwheat kasha. Aleksandr the Light Sergeyevich, when he came to the Pskov area to his father's village of Mikhaylovskoye, must have indulged in goose with crumbs. What is happening there now, is the sun

shining differently? In the Ryazan' area, in Bashkiria, Tataria, in the Altay Mountains and the Far East they respect buckwheat, while in other places they treat it without the proper attention. In Kaluzhskaya Oblast it is not at all good, in Chuvashia--just think!--they reached 2,000 hectares of sowings, in Stavropol' they do grow buckwheat, while in the Kuban' it is away with it from the chernozem. It is a complete disgrace in Krasnoyarskiy Kray, I began working there, I know what room there is there for buckwheat. In Kuybyshevskaya Oblast it is possible to sow another 30,000 hectares, while the people of Volgograd could have increased it to 30,000 hectares."

"Isn't that too much to increase it by, by the thousands of hectares?"

"It is just right. It is necessary for buckwheat to make up 8-10 percent in the grain fields."

"How much is it now?"

"In places it is that much, but on the whole it will not be more than 1.5 percent. Success for other crops comes from buckwheat. My agronomists report that it is an excellent phytoculture, it cures acidic soils, after it the wireworm does not touch potatoes, no weeds remain on the field."

Not without reason is buckwheat called "northern rice." During the first postwar five-year plan it covered 2 million hectares. But then its sowings began to decrease, and last year were already 1,123,000 hectares. It was planned to purchase 535,000 tons of buckwheat grain, but they procured 138,000 tons. Less than on the average during the years of the Ninth Five-Year Plan. It is not surprising that buckwheat in all its forms on the menu of our public dining is now a great rarity. What is the matter?

In Moscow there is the Lermontovskaya subway station. At the stop a stream of passengers leaves the cars. One half rushes toward the escalator on the right, to get from there to Khariton'yevskiy Lane, the other hurries to the left, in the direction of the other lane--Orlikov. The All-Union Academy of Agricultural Sciences imeni V. I. Lenin is on Kharitov'yevskiy Lane, the working headquarters of the sector--the RSFSR Ministry of Agriculture--is on Orlikov Lane. I got the impression that many of the current misfortunes of buckwheat are due to the fact that the scientists of the academy and the specialists of the headquarters of the sector are as they are on the subway train: they ride to work together, but at the stop they go in different directions and work separately.

I get in touch by telephone with Academician Secretary of the Plant Growing Department of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin Grigoriy Trofimovich Lavrenenko and say that I would like to know how things now stand with buckwheat. The academician secretary responded that he "was not completely up on things" and asked me to avail myself of the opportunity and meet with the director of the All-Union Scientific Research Institute of Leguminous and Groat Crops, Doctor of Biological Sciences

Nikolay Mikhaylovich Chekalin, who had just come to Moscow, to Khariton'-yevskiy Lane.

"True, in connection with buckwheat there is nothing to boast of for the present," N. Chekalin said, "but there is no reason for practical workers to take offense at science. There are enough of all kinds of recommendations and developments, it is worth following them--and it is possible to ensure the planned yield without particular problems."

But here is how the same questions were answered for me in the ministry, at the Main Administration of Grain and Oil Crops, which Stepan Filippovich Borshch heads:

"We have enough of our own difficulties, but science is of little help. It is providing too little good seed, it is breeding new varieties poorly."

There are counterclaims and approaches instead of a good alliance and co-operation. But the "prestige" of buckwheat does not increase because of this. It is more difficult to deal with it than with other crops, hence the desire of practical agronomists to reduce the area under it. Moreover, the choice of varieties for sowing is small. On the fields of the RSFSR 26 of them have been regionalized. Is this a lot or a little? Let us look at the catalog of regionalized varieties of various cereals. Wheat--140 varieties have been regionalized, barley--77, corn with hybrids--96.... Buckwheat of the Bogatyr' variety has been sown since 1938, Kalininskaya--since 1954. During this five-year plan it was planned to breed and regionalize seven new varieties of buckwheat. Four were regionalized. This measure is not so much of a practical nature as it is of a symbolic one: the new varieties in the total plantings cover only about 40,000 hectares.

However, what can be said about the new varieties? In developing them the breeders have to overcome the mysteries and opposition of nature. But the scientific research subdivisions of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin, which were entrusted with providing seeds of superior stock and the highest reproduction, are not coping with this task.

In 1977 the test plots and experimental fields should have turned over to farms for strain renovation nearly 28,200 tons of seed of select reproductions, but provided only 10,300 tons. In subsequent years matters turned out even worse.

What is this leading to? Open the most popular textbooks, handbooks, manuals and recommendations, of which specialists of the RSFSR Ministry of Agriculture and scientists are the authors. In them it is stated that the Mayorskaya, Krasnostreletskaya and Shatilovskaya-5 varieties surpass the Bogatyr' variety in yield by 1.5-3 quintals. But what are they sowing the fields with? Last year Krasnostreletskaya covered 71,500 hectares, while the less productive Bogatyr' covered 500,000 hectares. Where is the logic of management? It is commendable to promote new varieties, to explain what is good and what is bad, but they must be advanced to the fields quickly and vigorously!

Here is a typical example. Of all the places in the RSFSR you will probably not find another place so favorable for buckwheat as the fields of Orlovskaya Oblast. The weather is uniform, without the sharp changes which bees and the flowering of grasses cannot bear. The All-Union Scientific Research Institute of Leguminous and Groat Crops, at which there are many specialists, is located in the oblast. The institute and the oblast Administration of Agriculture have compiled more than one plan on increasing the production of buckwheat. But without result. Starting with seed growing and ending with the processing of the harvest, the oblast can serve as an example of the lack of agronomic culture, of economic and scientific helplessness.

The Skorospelaya variety was bred here in 1975, but last year they sowed it on barely more than 700 hectares, the same amount as in the year of propagation. They have been regionalizing Shatilovskaya-5 for more than 10 years but the variety covers only 8,330 hectares. In turn 57,000 hectares have been assigned to low-yielding crops! During the Eighth Five-Year Plan the average yield of buckwheat on the rich land of Orlovskaya Oblast was 6.3 quintals, during the Ninth Five-Year Plan--5.6 quintals. During this five-year plan they are harvesting 2-3 quintals. However, what is surprising here! They do not observe agricultural technology, they plant what they can get their hands on--grain of unknown reproductions, which long ago lost its varietal merits. In 1977 the experimental stations and seed growing farms of the oblast should have provided the kolkhozes and sovkhozes with 4,600 quintals of seed grain of superior stock and the highest reproduction, but produced only 70 quintals. In recent years they have managed barely half of this goal.

Unfortunately, the picture is typical. There are entire oblasts and autonomous republics, where they do not see stock seeds for years. During this five-year plan they have not received a single elite seed at the kolkhozes and sovkhozes of Kaluzhskaya, Kirovskaya, Orenburgskaya and Permskaya oblasts and in the Mariyskaya and Mordovskaya ASSR's. The low agritechnical standards, the poor level of management, the slowness of scientists and the neglect of seed growing have given buckwheat more trouble than it has experienced from the severest droughts, early frosts and incessant downpours.

Previously they worked on buckwheat on orders, every farm assigned to it a patch of plowed land: if it ripens, splendid, if not, the loss is not that severe. Now specialization and concentration have affected many crops, not each and everyone, but the best prepared and capable should take up buckwheat. In Tataria the Aznakayevskiy Rayon farmers have begun to allocate for it one-tenth of the grain fields, during the last five-year plan they increased the yield of buckwheat to 8.9 quintals. The 2.5-fold increase of its sowings along with the increase of the standards of farming made it possible to increase the sale of grain threefold. During the 10th Five-Year Plan the area planted with it in the rayon came to 9,000 hectares, this is now 12 percent of the grain fields. The Aznakayevskiy Rayon experts provide 27 percent of the harvest and one-third of the commercial buckwheat of the autonomous republic. It is unfortunate that in other

rayons they deal with it just anyhow. During this five-year plan Tataria, in spite of the fact that it has the example and experience of the Aznakayevskiy Rayon farmers, has not once been able to obtain decent harvests, and the four-year quota on the sale of buckwheat to the state has been half fulfilled.

The concentration of plantings and the specialization of its production are also raising serious problems. One of them is the supply of the experts of the buckwheat fields with special herbicides for controlling weeds, the allocation of an adequate amount of equipment, particularly tilling tractors, so that it would be possible to carry out the planting by the effective wide-row method, which as compared with the conventional method yields per hectare two to three additional quintals. However, they are not allocated equipment specially for buckwheat, they are hoping that at the farms they will be able to do without it. Even the experts of Aznakayevskiy Rayon, for instance of the Kommunizm Kolkhoz, where 500 hectares are allotted for buckwheat, sow some of the fields using conventional seeders and consciously agree to losses of the crop.

Apparently, with time the breeders will develop strong, vigorous varieties of buckwheat, which will compete with any of the highest yielding cereals, but today its potential is still lower than wheat, rye and barley. A three-fold increase of the purchase prices of buckwheat equalized the economic merits of the crops: it is no wonder when the profitability of its planting amounts to enviable indicators--300-500 percent. However, on the whole a shortage of grain, which is necessary for the development of livestock breeding, is forming. During this five-year plan the Aznakayevskiy Rayon farmers obtained 17 quintals of legumes per hectare, while barely more than 11 quintals of buckwheat. If we multiply the difference by the number of hectares, we would get 30,000 tons. It is not enough that this influences the indicators according to which the winners are determined, the farms cultivating buckwheat are experiencing difficulties due to the shortage of concentrates. This is having the result that the gained economic impact from buckwheat is lost in another sector--livestock breeding. Beet growers receive compensation in the form of molasses and pulp, for their products they are given sugar in kind. Should not buckwheat be equated with the especially important crops, should not the coefficient of its yield be taken into account? For at the farms, where they prefer other cereals to buckwheat, other conditions being equal they have not more money, but natural grain.

Much is being written about buckwheat. The year before last to one of the publications in SOVETSKAYA ROSSIYA the RSFSR Ministry of Agriculture responded that the necessary steps were being taken, the situation would be corrected--there would be more plantings, the harvests would rise, the purchases would increase. What happened in reality? In 1979 the sowings of buckwheat decreased, the harvests remained at the previous level, while its purchases decreased by 100,000 tons.

Yet the experts of the buckwheat fields are receiving letters in which they are asked to help to cultivate this crop and to suggest how it is necessary to sow and harvest it. Here is one of them, which came addressed to State Prize winner F. Shakirov, a link leader of the Kommunizm Kolkhoz of Aznakayevskiy Rayon in the Tatarskaya ASSR, who every year obtains 20 quintals of buckwheat per hectare.

"As an agronomist I have long wanted to engage in the cultivation of this crop," writes Yekaterina Ivanovna Il'ina, "I earnestly ask you to sell me some buckwheat seed, 20 kg. Send it in two parcels addressed to me, I will send you the money before or after receiving the parcels, let me know how much it costs. We do not have seeds of this crop in our oblast."

The address: Remdovskiy Sovkhoz, Gdovskiy Rayon, Pskovskaya Oblast. An ancient Russian region, at the center of which, as is mentioned in the chronicles, back in the 16th century they had a special row of shops for the sale of buckwheat, which "is very good and useful for various needs."

Perhaps there are enough formal replies, why waste time on extra paper? Even if this is an exceptional case, we agree to wait until autumn with a report on the steps taken from the ministry and from scientists, if only, at last, to make the readers happy with the steps actually taken--a good statistical report from the buckwheat fields.

#### Belorussian Resolution

Minsk SEL'SKAYA GAZETA in Russian 12 Apr 80 p 1

Article: "On Additional Measures to Increase the Production of Buckwheat at Kolkhozes and Sovkhozes and to Stimulate the Fulfillment of the Plans on Its Procurement"

Text The Central Committee of the Belorussian Communist Party and the Belorussian SSR Council of Ministers note that the Belorussian SSR Ministry of Agriculture and its local organs, the oblast committees, city committees and rayon committees of the Belorussian Communist Party, the oblast soviet executive committees and rayon soviet executive committees, the kolkhozes and sovkhozes, which cultivate buckwheat, have not ensured in full the fulfillment of the instructions of the CPSU Central Committee and the decrees of the Central Committee of the Belorussian Communist Party and the republic government on increasing the production and procurement of buckwheat.

At many farms, when cultivating this crop, as before serious violations of the rules of agricultural technology are being allowed, its sowings are split up. Steps of moral and material stimulation are being undertaken inadequately. There is no effective monitoring on the part of party committees of the organization of production and the fulfillment of the plans on the procurement of buckwheat grain.

In order to enhance the economic interest of kolkhozes and sovkhozes in the enlargement of the plantings and the increase of the production and sale to the state of buckwheat and to create at buckwheat growing farms the necessary conditions for the development of livestock sectors the Central Committee of the Belorussian Communist Party and the Belorussian SSR Council of Ministers have established the counter sale to them of mixed fodders in the amount of 6 tons per ton of buckwheat sold to the state on the condition of the fulfillment by the farm of the plan of its procurement and its own supply with high quality seed.

The Belorussian SSR Ministry of Agriculture, the oblast committees, city committees and rayon committees of the Belorussian Communist Party, the oblast soviet executive committees and rayon soviet executive committees, the kolkhozes and sovkhozes are ordered to analyze carefully the state of affairs in the cultivation of buckwheat and to take the necessary steps on the radical improvement of agricultural technology, the sharp increase of the production of the grain of this crop in order to successfully fulfill the plans of procurement in 1980 and subsequent years. It is necessary to direct particular attention to the further concentration of the plantings of buckwheat at farms this year, to introduce highly productive varieties and to use the optimum, advanced technologies of cultivation. In 1980 the size of the sown areas should be increased to a minimum of 80-100 hectares at each buckwheat growing farm.

It is necessary for the Belorussian SSR Ministry of Agriculture and its local organs, the oblast soviet executive committees and rayon soviet executive committees to hold in the republic, oblasts and rayons seminars on questions of the cultivation of buckwheat and the study of the know-how of the leading farms, which obtain large harvests.

For the purposes of increasing the labor activeness and developing the creative initiative of kolkhoz farmers, workers of state farms, the managers and specialists of farms and agricultural organs it is recommended to organize the republic socialist competition of oblasts, rayons, kolkhozes, sovkhozes and other state agricultural enterprises for the increase of the production and procurement of buckwheat.

#### Scientific Production Conference

Minsk SEL'SKAYA GAZETA in Russian 12 Apr 80 p 1

/Article (BELTA): "Return the Past Glory to Buckwheat"/

/Text/ Biological scientists consider buckwheat an irreplaceable dietetic food product. Its groats are rich in protein, contain fats and carbohydrates, mineral salts and organic acids, trace elements and vitamins, increase physical endurance, promote the rapid regeneration of blood and possess a number of other valuable properties. Among the people it has long been taken as the rule to keep near the flowering buckwheat field a beehive--the best honey is gathered here. They did not forget to sow

buckwheat during the most difficult years. For example, its gross harvest in the republic during the postwar five-year plans considerably exceeded the present harvest.

What has happened in recent times with the well-deserved reputation of this crop? Why are buckwheat groats served at the table of the Soviet individual in pitiful amounts? The answers to these questions are given in many party and soviet documents. Specific measures on correcting the situation which has formed have also been elaborated. However, as was noted by the participants in the republic scientific production conference, which was held in Minsk and was devoted to problems of increasing the production of buckwheat under the conditions of Belorussia, these measures have not been implemented.

"Exceptionally strenuous obligations have been assumed for the current year by our rural workers," Candidate Member of the CPSU Central Committee Politburo and First Secretary of the Central Committee of the Belorussian Communist Party P. M. Masherov said at the republic conference of the party, soviet, trade union and Komsomol aktiv. "And, of course, it is impossible by means of the established traditional practice of work to reach, for example, a yield of grain cereals of 32 quintals per hectare and to ensure a gross harvest of grain of 9-9.5 million tons." The same thing fully applies to buckwheat. Not only to change radically the attitude toward it, but also to use the latest achievements of scientific and technology in its cultivation--this is what was discussed by the directors of scientific research institutes, who spoke at the conference: Director of the Scientific Research Institute of Farming V. P. Samsonov, Director of the Scientific Research Institute of Soil Science and Agrochemistry I. M. Bogdevich, Director of the Scientific Research Institute of Plant Protection V. F. Samersov, Chief of the Belorussian SSR Sortsemprom V. P. Kulakov, Academician Breeder Ye. D. Gorina, Senior Research Association of the Scientific Research Institute of the Mechanization and Electrification of Agriculture of the Nonchernozem Zone of the USSR S. G. Grin'kov. Chief of the Administration of Agriculture of the Shuchinskiy Rayon Soviet Executive Committee V. I. Dem'yankov, chief agronomist of the Administration of Agriculture of the Ivachevichskiy Rayon Soviet Executive Committee I. I. Mikhnyuk, Director of the Zazer'ye Experimental Base of Pukhovichskiy Rayon I. N. Zhovnerchik, Chairman of the Progress Kolkhoz of Barabovichskiy Rayon G. S. Shidlovskiy and chief agronomist of the Gomel'skiy Sovkhoz of Gomel'skiy Rayon V. M. Savchenko shared their experience in organizing labor in the cultivation of buckwheat.

The speech of I. S. Golubets, the leader of a mechanized link for the cultivation of buckwheat from the Iskra Kolkhoz of Chervenskiy Rayon, aroused particular interest among those present. By performing operation by operation all the work on an area of 200 hectares, the four machine operators raised a crop of 21 quintals of grain per hectare. The planting was carried out by the advanced wide-row method, before seeding the seeds were rinsed, the most production of them were selected and then disinfected. The link leader sowed 105 hectares excellently, cultivated the plantings on this area and harvested the buckwheat. As a result on some plots its

yield was 25 quintals. Now the machine operators have undertaken to obtain the same yield from the entire buckwheat field of 220 hectares.

With allowance made for the experience of the leading farms and the research activity of scientists the Belorussian SSR Ministry of Agriculture jointly with the Belorussian Scientific Research Institute of Farming has elaborated specific recommendations for all buckwheat growing kolkhozes and sovkhozes. The executives and chief agronomists of the oblast and rayon administrations of agriculture, the representatives of the farms and other participants in the conference received them for practical adoption.

Secretary of the Central Committee of the Belorussian Communist Party N. I. Dementey and Belorussian SSR Minister of Agriculture F. P. Sen'ko spoke at the conference. Deputy Chairman of the Belorussian SSR Council of Ministers G. G. Kovalenko took part in its work.

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